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GENERAL ELECTRIC COMPANY

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF UTAH CENTRAL DIVISION

CAO GROUP, INC. a Utah Corp. **Plaintiff.** **vs.** **GE LIGHTING, INC. et al.** **Defendant.**	**Central Division Civil Cases 2:11CV426 PMW** **GE LIGHTING, INC.'S ANSWER, AFFIRMATIVE DEFENSES, AND COUNTERCLAIMS OF GENERAL ELECTRIC COMPANY TO CAO GROUP'S COMPLAINT FOR PATENT INFRINGEMENT** **JURY DEMANDED**

Defendant GE LIGHTING, INC. ("GE" in the following Answer and Affirmative Defenses) submits its Answer, Affirmative Defenses, and Counterclaims to Plaintiff CAO GROUP's ("CAO's") Complaint for Patent Infringement ("the Complaint").

PARTIES, JURISDICTION AND VENUE

1. GE is without knowledge or information sufficient to form a belief as to the truth of the allegations set forth in paragraph 1 and therefore denies them.

2. In response to paragraph 2, GE admits that GE Lighting, Inc. is a Delaware corporation and that it has a place of business at 1975 Noble Road, East Cleveland, Ohio 44112.

3. GE is without knowledge or information sufficient to form a belief as to the truth of the allegations set forth in paragraph 3 and therefore denies them.

4. GE is without knowledge or information sufficient to form a belief as to the truth of the allegations set forth in paragraph 4 and therefore denies them.

5. GE is without knowledge or information sufficient to form a belief as to the truth of the allegations set forth in paragraph 5 and therefore denies them.

6. GE is without knowledge or information sufficient to form a belief as to the truth of the allegations set forth in paragraph 6 and therefore denies them.

7. GE is without knowledge or information sufficient to form a belief as to the truth of the allegations set forth in paragraph 7 and therefore denies them.

8. GE is without knowledge or information sufficient to form a belief as to the truth of the allegations set forth in paragraph 8 and therefore denies them.

9. GE is without knowledge or information sufficient to form a belief as to the truth of the allegations set forth in paragraph 9 and therefore denies them.

10. Paragraph 10 sets forth no allegations for which response is required.

11. The allegations in paragraph 11 set forth legal conclusions to which no response is required. GE admits that the Complaint alleges infringement under the United States patent laws.

12. With respect to the allegations in paragraph 12 advanced against GE, GE is not challenging that it is subject to the personal jurisdiction of this Court. GE specifically denies that it has committed the tort of patent infringement in the United States and in the State of Utah.

With respect to the allegations against all other defendants, GE is without knowledge or information sufficient to form a belief as to the truth of those allegations and, therefore, denies

13. In response to paragraph 13, at this time, GE is not challenging the propriety of venue in this District under 28 U.S.C. §§ 1391(b), 1391(c), and 1400(b). GE denies that this is the most convenient venue under 28 U.S.C. § 1404 and reserves the right to move to transfer or move to change this case to a more convenient forum.

GENERAL ALLEGATIONS

14. GE admits that Exhibit A purports to be a copy of U.S. Patent No. 6,465,961 ("the '961 patent"). GE further admits that the '961 patent is entitled "SEMICONDUCTOR LIGHT SOURCE USING A HEAT SINK WITH A PLURALITY OF PANELS," and that, on its face, it names Densen Cao as the inventor, and that it was issued on October 15, 2002. GE denies all other allegations contained in paragraph 14 including, but not limited to, the allegation, that the '961 patent was "duly and legally issued."

15. GE admits that Exhibit B purports to be a copy of U.S. Patent No. 6,634,770 ("the '770 patent"). GE further admits that the '770 patent is entitled "LIGHT SOURCE USING SEMICONDUCTOR DEVICES MOUNTED ON A HEAT SINK " and that, on its face, it names Densen Cao as the inventor, and that it was issued on October 21, 2003. GE denies all other allegations contained in paragraph 15 including, but not limited to, the allegation, that the '770 patent was "duly and legally issued."

16. GE admits that Exhibit C purports to be a copy of U.S. Patent No. 6,746,885 ("the '885 patent"). GE further admits that the '885 patent is entitled "METHOD FOR MAKING A SEMICONDUCTOR LIGHT SOURCE " and that, on its face, it names Densen Cao as the

inventor, and that it was issued on October June 8, 2004. GE denies all other allegations contained in paragraph 16 including, but not limited to, the allegation, that the '885 patent was "duly and legally issued."

17. Paragraph 17 sets forth no allegations for which response is required.

18. GE is without knowledge or information sufficient to form a belief as to the truth of the allegations set forth in paragraph 18 and therefore denies them.

19. GE is without knowledge or information sufficient to form a belief as to the truth of the allegations set forth in paragraph 19 and therefore denies them.

FIRST CLAIM FOR RELIEF
(Patent Infringement, 35 U.S.C. § 271(a))

20. GE incorporates by reference its responses to all preceding paragraphs of the complaint.

21. GE is without knowledge or information sufficient to form a belief as to the truth of the allegations set forth in paragraph 21 that "CAO is the lawful owner of the CAO Patents, and has the right to bring this claim for patent infringement. GE DENIES all allegations in paragraphs 21 concerning acts of GE. GE is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations set forth in paragraph 21 and therefore denies them.

22. GE DENIES all allegations in paragraph 22 concerning acts of GE. GE is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations set forth in paragraph 22 and therefore denies them.

23. GE DENIES all allegations in paragraph 23 concerning acts of GE, including but not limited to the allegation that it has willfully infringed the CAO Patents, that it was

knowledgeable about the CAO Patents and that it had/has no reason to believe that the CAO Patents are invalid and/or not infringed. GE is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations set forth in paragraph 23 and therefore denies them.

24. GE DENIES all allegations in paragraph 24 concerning acts of GE, including but not limited to the allegation that, as a result of acts of GE, CAO has been damaged and will continue to suffer irreparable injury unless GE is enjoined. GE is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations set forth in paragraph 24 and therefore denies them.

SECOND CLAIM FOR RELIEF
(Patent Infringement, 35 U.S.C. § 271(b))

25. GE incorporates by reference its responses to all preceding paragraphs of the complaint.

26. GE DENIES all allegations in paragraph 26 concerning acts of GE, including but not limited to the allegations that it has knowingly made and sold products that infringe the CAO Patents and that it has induced infringement of the CAO Patents. GE is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations set forth in paragraph 26 and therefore denies them.

27. GE DENIES all allegations in paragraph 27 concerning acts of GE, including but not limited to the allegation that it has induced and is inducing others to infringe the CAO Patents. GE is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations set forth in paragraph 27 and therefore denies them.

28. GE DENIES all allegations in paragraph 28 concerning acts of GE, including but not limited to the allegation that it has willfully infringed the CAO Patents, that it was knowledgeable about the CAO Patents and that it had/has no reason to believe that the CAO Patents are invalid and/or not infringed. GE is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations set forth in paragraph 28 and therefore denies them.

29. GE DENIES all allegations in paragraph 29 concerning acts of GE, including but not limited to the allegation that, as a result of acts of GE, CAO has been damaged and will continue to suffer irreparable injury unless GE is enjoined. GE is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations set forth in paragraph 29 and therefore denies them.

THIRD CLAIM FOR RELIEF
(Patent Infringement, 35 U.S.C. § 271(c))

30. GE incorporates by reference its responses to all preceding paragraphs of the complaint.

31. GE DENIES all allegations in paragraph 31 concerning acts of GE and its suppliers and customers with respect to products sold to or purchased from GE, including but not limited to the allegation that light source products sold to or purchased from GE directly infringe the CAO Patents. GE is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations set forth in paragraph 31 and therefore denies them.

32. GE DENIES all allegations in paragraph 32 concerning acts of GE, including but not limited to the allegation that it has engaged in, and is engaging in, acts of contributory

infringement. GE is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations set forth in paragraph 32 and therefore denies them.

33. GE DENIES all allegations in paragraph 33 concerning acts of GE, including but not limited to the allegation that it has willfully infringed the CAO Patents, that it was knowledgeable about the CAO Patents and that it had/has no reason to believe that the CAO Patents are invalid and/or not infringed. GE is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations set forth in paragraph 33 and therefore denies them.

34. GE DENIES all allegations in paragraph 34 concerning acts of GE, including but not limited to the allegation that, as a result of acts of GE, CAO has been damaged and will continue to suffer irreparable injury unless GE is enjoined. GE is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations set forth in paragraph 34 and therefore denies them.

PRAYER FOR RELIEF

These paragraphs set forth the statement of relief requested by CAO to which no response is required. GE denies that CAO is entitled to any of the requested relief whatsoever.

JURY DEMAND

No response is required to CAO's request for a jury trial.

AFFIRMATIVE DEFENSES

Subject to the responses above, GE alleges and asserts the following defenses in response to the allegations, undertaking the burden of proof only as to those defenses deemed affirmative defenses by law, regardless of how such defenses are denominated herein. In addition to the affirmative defenses described below, subject to the responses above, GE specifically reserves all rights to allege additional affirmative defenses that become known through the course of discovery.

1. GE does not infringe and has not infringed, whether directly, contributorily, or by inducement, any claims of the CAO Patents patent either literally or under the Doctrine of Equivalents.

2. The claims of the CAO Patents are invalid for failure to satisfy one or more of the requirements of Sections 100 et seq., 101, 102, 103, 112, and 132 of Title 35 of the United States Code.

3. The claims of the CAO Patents are unenforceable as asserted, in whole or in part, by the doctrines of waiver, laches, and/or estoppel.

4. CAO cannot satisfy the requirements applicable to their request for injunctive relief and have an adequate remedy at law.

5. CAO's damages are limited because it has not satisfied the requirements for obtaining damages under 35 U.S.C. § 287, and the limitations period further bars past damages claims.

6. To the extent GE has made, used, or sold any products that perform the functions of the apparatuses or methods recited in the claims of the CAO Patents, any such products are so

far changed in operating principle from the claims of the CAO Patents that they perform these functions in a substantially different way and therefore cannot infringe as a matter of law.

7. The Complaint fails to state a claim upon which relief can be granted.

COUNTERCLAIMS

General Electric Company[1] ("GE" for purposes of the Counterclaims), advances the following Counterclaims against the Plaintiff and upon information and belief, states as follows:

THE PARTIES

1. GE is a New York corporation with a place of business at 3135 Easton Turnpike, Fairfield, Connecticut 06828.

2. On information and belief, based on its pleadings in this action, CAO Croup ("CAO") is a Utah corporation with a principle place of business at 4628 West Skyhawk Drive, West Jordan, Utah 84083.

JURISDICTION AND VENUE

3. Subject to GE's Answer and Affirmative Defenses, GE alleges that this Court has jurisdiction over the subject matter of these Counterclaims, without limitation, under, 28 U.S.C. §§ 1131, 1367, 1338(a), 2201, and 2202, and venue for these Counterclaims is proper in this District.

[1] The counterclaims are brought in the name of General Electric Company, the GE entity that is involved with the accused products identified in the Complaint. Counsel for General Electric Company has informed Plaintiff's counsel that the naming of GE Lighting Inc. appears to have been in error, and, it is anticipated that Plaintiff's counsel and General Electric Company's counsel will work together to effect any necessary amendments in the pleadings to ensure that the proper entity is named as a defendant in this case.

4. This Court has personal jurisdiction over CAO.

FACTUAL BACKGROUND

5. In its Complaint, the Plaintiff asserts that GE has infringed U.S. Patent No. 6,456,961 ("the '961 patent"), U.S. Patent No. 6,634,770 ("the '770 patent"); and U.S. Patent No. 6,746,885 ("the '885 Patent"). The '916 patent, '770 patent and '885 patent are collectively referred to in these counterclaims as "the CAO Patents."

6. GE has not infringed any of the claims in the CAO Patents and the claims of the CAO Patents are invalid and/or unenforceable.

7. Consequently, there is an actual case or controversy between the GE and CAO over the non-infringement, invalidity, and/or unenforceability of the CAO Patents.

COUNT ONE

DECLARATORY JUDGMENT OF NON-INFRINGEMENT OF THE CAO PATENTS

8. GE restates and incorporates by reference its allegations in the previous paragraphs of its Counterclaims.

9. An actual case or controversy exists between GE and the Plaintiffs as to whether each of the CAO Patents is not infringed by GE.

10. A judicial declaration is necessary and appropriate so that GE may ascertain its rights regarding the CAO Patents.

11. GE has not infringed and does not infringe, directly or indirectly, any claim of the CAO Patents. One or more limitations required by each claim is missing from the products made, used, sold, offered for sale and/or imported by GE. The following paragraphs provide non-limiting examples of such missing limitations.

Example Missing Limitation – No Conversion Coating Applied to Enclosure Interior

12. For example, and without limitation, GE does not infringe any of claims 1-8, 10, 16, 19, 20 or 21 of the '855 patent (or claim 22 of the '855 patent as dependent on claims 1, 20 or 21) or claims 2 or 11 of the '961 patent. Among other things:

12.1 GE does not perform the step of "applying a conversion coating for converting monochromatic light emitted by [said] chips to white light to the interior of said enclosure" as required by claims 1-8 of the '855 patent.

12.2 GE's products do not include an enclosure that "has a light conversion coating bated [sic] on its interior for converting light emitted by said semiconductor devices to white light" as required by claim 10 of the '855 patent.

12.3 GE's products do not include an enclosure that "has a light conversion coating located on its interior for converting light emitted by said semiconductor devices to white light" as required by claim 16 of the '855 patent.

12.4 GE does not perform the step of "applying a light conversion coating to the interior of said enclosure, said coating being capable of converting monochromatic light to white light" as required by claim 19 of the '855 patent.

12.5 GE does not perform the step of "applying a conversion coating to the interior of said enclosure, said conversion coating being capable of converting a monochromatic light to white light" as required by claims 20 and 21 of the '855 patent

12.6 GE's products do not include an enclosure, "a coating for converting monochromatic light emitted by said chip to white light" "wherein said coating is located on the interior of said enclosure" as recited in claims 2 and 11 of the '961 patent.

Example Missing Limitation – No Heat Sink Having a Plurality of Panels Oriented to Facilitate Light Emission in Different Directions

13. As another, and without limitation, GE does not infringe any of claims 9-13 of the '855 patent (or claim 22 of the '855 patent as dependent on claim 9) or claims or claims 1-9, 10-16, 17-19 and 20 of the '961 patent. Among other things:

13.1 GE's products do not include a "secondary heat sink having a plurality of panels on it suitable for mounting primary heat sinks thereon, said panels on said secondary heat sink being oriented to facilitate emission of light from the semiconductor light source in desired directions around the semiconductor light source" as required by claims 9-13 of the '885 patent and claims 10-16 of the '961 patent..

13.2 GE's products do not include a "heat sink having a plurality of panels on it suitable for mounting semiconductor devices thereon, said panels on said heat sink being oriented to facilitate emission of light from the semiconductor light source in desired directions around the semiconductor light source" as required by claims 1-13 ,17-19 and 20 of the '961 patent.

Example Missing Limitation – No Heat Sink with Air Chamber in it to Facilitate Air Flow

14. As a further example, and without limitation, GE does not infringe any of claims 5-7, 11-12, 15-19, 20 and 21 of the '885 patent (or claim 22 of the '855 patent as dependent on claims 15, 18, 20 or 21). Among other things:

14.1 GE's products do not include a heat sink located within an enclosure that "has an air chamber within it to facilitate air flow and heat dissipation" as required by claims 5-7 of the '855 patent.

14.2 GE's products do not include either secondary heat sink located within an enclosure or a plurality of primary heat sinks mounted on a secondary heat sink where one of the primary or the secondary heat sinks "has an air chamber within it to facilitate air flow and heat dissipation" as required by claims 11-12 of the '855 patent.

14.3 GE does not perform the steps of obtaining a heat sink suitable for being located within an enclosure with the heat sink "having an air chamber within its interior through which air may flow in order to facilitate heat dissipation" as required by claims 15-19 and 20 of the '855 patent.

14.4 GE does not perform the steps of obtaining a secondary heat sink suitable for being located within an enclosure with the secondary heat sink "having an air chamber within its interior through which air may flow in order to facilitate heat dissipation" as required by claims 21-22 of the '855 patent.

Example Missing Limitation – No Heat Sink in Interior of Enclosure

15. As a further example, and without limitation, GE does not infringe any of claims 1-8, 9-13, 14, 15-19, 20 or 21 of the '885 patent (or claim 22 of the '855 patent as dependent on claims 9, 13, 14, 20 or 21); claim 1-12 and 13-17 of the '770 patent, or claims 1-9, 10-14, 15, 16, 17-19 and 20 of the '961 patent. Among other things:

15.1 GE does not perform the step of "fabricating at least one heat sink to be located within said enclosure" as required by claims 1-8 of the '855 patent;

15.2 GE does not perform the step of "obtaining a secondary heat sink suitable for being located within said enclosure" as required by claims 9-13 and 21 of the '855 patent;

15.3 GE does not perform the step of "obtaining a secondary heat sink suitable for being located within said enclosure" as required by claims 14, 15-19 and 20 of the '855 patent;

15.4 GE's products do not include "a secondary heat sink located in said interior volume" as required by claims 1-12 of the '770 patent;

15.5 GE's products do not include "a heat sink located in said interior volume" as required by claims 13-17 of the '770 patent;

15.6 GE's products do not include "a heat sink located in said interior volume" as required by claims 1-9, 15, 16, 17-19 and 20 of the '961 patent; and

15.7 GE's products do not include "a secondary heat sink located in said interior volume" as required by claims 10-14 of the '961 patent.

Example Missing Limitation – No Light Reflective Adhesive

16. As a further example, and without limitation, GE does not infringe any of claims 2, 4, 9-13, 14, 20 and 21 of the '885 patent (or claim 22 of the '855 patent as dependent on claims 9, 13, 14, 20 or 21), claim 5 of the '770 patent, or claims 6 and 16 of the '961 patent. Among other things:

16.1 GE does not perform the step of "applying a light reflective adhesive between said semiconductor device and said heat sink" as required by claim 2 of the '855 patent.

16.2 GE does not perform the step of "placing a quantity of light reflective adhesive located between said semiconductor devices and said heat sink" as required by claim 4 of the '855 patent.

16.3 GE does not perform the step of "mounting at least one semiconductor device on each of said primary heat sinks by use of a light reflective heat sink" as required by claims 9-13 of the '855 patent.

16.4 GE does not perform the step of "mounting said semiconductor devices on said heat sink by use of a light reflective heat sink" as required by claim 14 of the '855 patent.

16.5 GE does not perform the steps of "obtaining a plurality of light-emitting semiconductor devices, and mounting said light-emitting semiconductors to said heat sink by use of light-reflective adhesive" as required by claims 20 and 21-22 of the '855 patent.

16.6 GE's products do not include a "quantity of light reflective adhesive located between said chip and said primary heat sink" as required by claim 5 of the '770 patent.

16.7 GE's products do not include a "quantity of light reflective adhesive located between said chip and said heat sink" as required by claims 6 and 16 of the '961 patent.

Example Missing Limitation – No TE Cooler Material

17. As a further example, and without limitation, GE does not infringe any of claims 6, 7, 12 or 17 of the '885 patent. Among other things:

17.1 GE's products do not include an air chamber that "has a TE cooler on it" as required by claims 6, 12 and 17 of the '885 patent.

17.2 GE does not perform the step of "placing a quantity of TE cooler material on the interior of said air chamber" as required by claim 7 of the '885 patent.

COUNT TWO

DECLARATORY JUDGMENT OF INVALIDITY OF THE CAO PATENTS

18. GE restates and incorporates by reference its allegations in the previous paragraphs and sub-paragraphs of its Counterclaims.

19. An actual case or controversy exists between GE and the Plaintiffs as to whether the claims of the CAO Patent are invalid.

20. A judicial declaration is necessary and appropriate so that GE may ascertain its rights as to whether the CAO Patents are invalid.

21. The claims of the CAO Patents are invalid for failing to comply with one or more of the requirements for patentability set forth in 35 U.S.C. Sections 100 et seq.

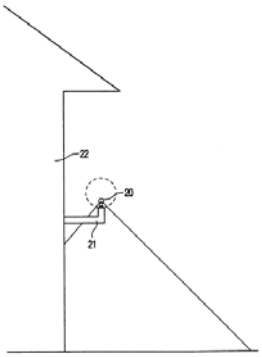
Example – Invalidity Over the Prior Art Begemann Reference (Anticipation Under 35 U.S.C. § 102

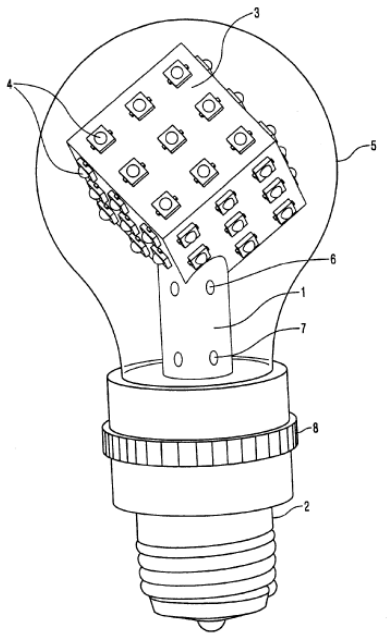
22. As one example, and without limitation, claim 17 of the '961 Patent and claims 15 and 22 of the '885 patent are invalid as being anticipated by prior art United States Patent No. 6,220,722 to Begemann (hereinafter the "Prior Art Begemann Reference"). Among other things:

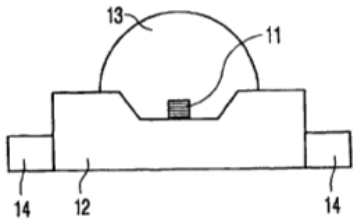
22.1 The Prior Art Begemann Reference was filed on September 16, 1999 and issued on April 24, 2001 and is, therefore, prior art to each of the CAO Patents.

22.2 As illustrated in the chart below, the Prior Art Begemann Reference completely discloses the subject matter of claim 17 of the '961 patent, exactly as recited in the claim, rendering the claim invalid under 35 U.S.C. § 102.

Claim 17 of the '961 Patent	**Disclosure in the Prior Art Begemann Reference**
17. A semiconductor light source	Begemann discloses a semiconductor LED-base lamp for

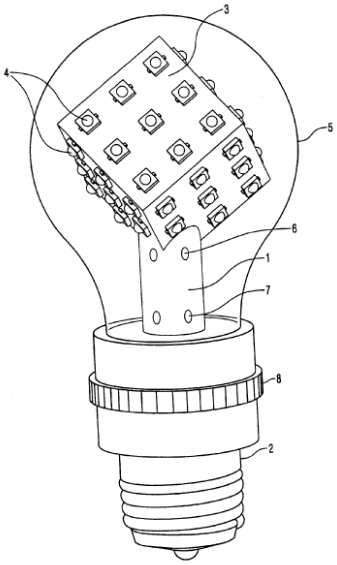
for emitting light to illuminate a space used by humans, the semiconductor light source comprising:	emitting light to illuminate a space, such as the outside of a house used by humans.  FIG. 4 FIG. **4** diagrammatically shows an application of a LED lamp, which requires an asymmetric light distribution. The LED lamp (**20**) is used as outdoor lighting and is situated on a holder (**21**) which is secured to the wall (**22**) of a building. *See, e.g.,* Prior Art Begemann Reference at Fig. 4 and at Col. 5, lines 15-18.
an enclosure, said enclosure being fabricated from a material substantially transparent to white light, an interior volume within said enclosure,	Begemann discloses a screw-in type light bulb that includes an enclosure 5, formed of resin that is transparent to white light and that defines a volume within the enclosure.

	 FIG. 2 *See, e.g.,* Prior Art Begemann Reference at Fig. 2 and at Col. 3, lines 48-53 and claim 2 (describing the enclosure as semi-transparent).
a heat sink located in said interior volume, said heat sink being capable of drawing heat from one or more semiconductors devices,	Begemann's lamp includes a heat sink 3 located in the interior of the volume capable of drawing heat away from one or more LED semiconductor devices 4. In the example described with respect to FIG. **2**, the substrate **(3)** is cube-shaped with six flat faces, and is connected to gear column **(1)** via a vertex of the cube. The substrate **(3)** is made of a metal or a metal alloy, thereby enabling a good heat conduction from the LEDs **(4)** to the gear column **(1)** to be achieved. In the present case, the substrate is made of a copper alloy. Each one of the faces of the pyramid is provided with a number of (eight or nine) LEDs **(4)**, which are secured to the faces by means of a heat-conducting adhesive. In this example, multiple-chip *See, e.g.,* Prior Art Begemann Reference at Fig. 2 (above) and at Col. 4, lines 22-33.

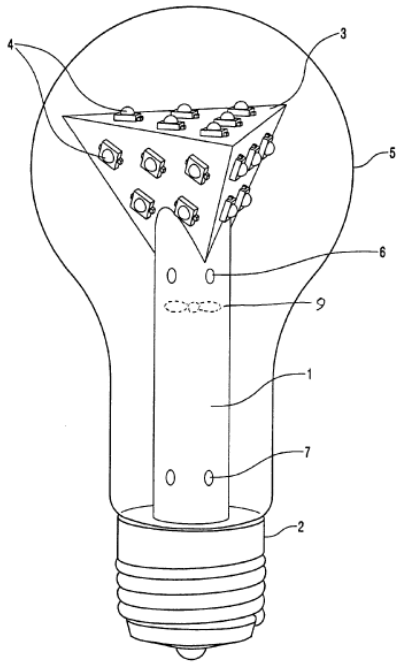
said heat sink having a plurality of panels on it suitable for mounting semiconductor devices thereon, said panels on said heat sink being oriented to facilitate emission of light from the semiconductor light source in desired directions around the semiconductor light source,	Begemann's heat sink 3 has a plurality of panels (specifically six flat faces) upon which LED semiconductor devices 4 are mounted the panels being oriented at different angles and positions to facilitate the emission of light from the lamp in desired directions around the light source. *See, e.g.,* Prior Art Begemann Reference at Fig. 2 (above) and at Col. 4, lines 22-33 (above).
at least one semiconductor chip module capable of emitting light mounted on one of said panels, said semiconductor chip module including a module heat sink, a semiconductor chip mounted to said module heat sink, and a cover covering said semiconductor chip,	Begemann specifically teaches that the LED semiconductor devices used in his lamp can take the form of a semiconductor chip modules 4 capable of emitting light mounted on one of the panels of the heat sink 3. Begemann further specifically teaches that the semiconductor chip module 4 can include a module heat sink 12, and an optical cover 13.  FIG. 3A FIG. **3** is a schematic, sectional view of three types of LEDs **(4)** which can suitably be used in the invented LED lamp. FIG. **3**-A shows a LED which comprises single-chip LEDs, which each have only one light point **(11)** per LED. This light point **(11)** is placed on a so-called MC-PCB **(12)**, which is responsible for a good heat transfer. Light point **(11)** is provided with a primary optical system **(13)**, by means of which the radiation characteristic of the LED can be influenced. The LED **(4)** is also provided with two electrical connections **(14)**. Via these connections, the LED is soldered onto the substrate **(3)**. A heat-conducting adhesive between MC-PCB **(12)** and substrate **(3)** is responsible for a good heat dissipation from the LED to the substrate. *See, e.g.,* Prior Art Begemann Reference at Fig. 3A and at Col. 4, lines 53-65.
said semiconductor chip module	Begemann specifically teaches that the semiconductor chip

being capable of emitting monochromatic light.	modules can produce either green, red or blue monochromatic light. If single-chip LEDs **(4)** in the colors green, red and blue are employed on the substrate **(3)**, it is convenient to group these LEDs in trios, and provide a further secondary optical system **(15)** above the primary optical systems. In this manner, a good color blending of green, red and blue light is obtained. This situation is diagrammatically shown in FIG. **3**-D. *See, e.g.,* Prior Art Begemann Reference at Col. 5, lines 8-13.

22.3 As illustrated in the chart below, the Prior Art Begemann Reference completely discloses the subject matter of claim 15 of the '885 patent, exactly as recited in the claim, rendering the claim invalid under 35 U.S.C. § 102:

Claim 15 of the '885 Patent	**Disclosure in the Prior Art Begemann Reference**
15. A method for making a semiconductor light source comprising the steps of: obtaining an enclosure,	Begemann discloses a semiconductor LED-base lamp that includes an enclosure (5).  FIG. 2

	See, e.g., Prior Art Begemann Reference at Fig. 2.
obtaining a heat sink suitable for being located within said enclosure, said heat sink being capable of drawing heat from one or more semiconductors devices,	Begemann's lamp includes a heat sink 3 located in the interior of the volume capable of drawing heat away from one or more LED semiconductor devices 4. In the example described with respect to FIG. **2**, the substrate **(3)** is cube-shaped with six flat faces, and is connected to gear column **(1)** via a vertex of the cube. The substrate **(3)** is made of a metal or a metal alloy, thereby enabling a good heat conduction from the LEDs **(4)** to the gear column **(1)** to be achieved. In the present case, the substrate is made of a copper alloy. Each one of the faces of the pyramid is provided with a number of (eight or nine) LEDs **(4)**, which are secured to the faces by means of a heat-conducting adhesive. In this example, multiple-chip *See, e.g.,* Prior Art Begemann Reference at Fig. 2 (above) and at Col. 4, lines 22-33.
said heat sink having an air chamber within its interior through which air may flow in order to facilitate heat dissipation,	Begemann specifically teaches that the heat sink 3 may have an air chamber within its interior through which air may flow in order to facilitate heat dissipation. Specifically, Begemann teaches that the heat sink may have an air chamber interior, holes 6 and a fan 9 to facilitate air flow through the interior of the hear sink 3.

	 FIG. 1 The LED lamp shown in FIG. **1** also includes a fan **(9)** incorporated in the gear column **(1)**, which fan generates an air flow during operation of the lamp. This air flow leaves the gear column **(1)** via holes **(6)** provided in the gear column, and re-enters the gear column via the holes **(7)** provided in the gear column. By suitably shaping and positioning the holes **(6)**, the air flow is led past a substantial number of the LEDs present on the substrate **(3)**. By virtue thereof, an improved heat dissipation from the substrate and the LEDs is obtained. *See, e.g.,* Prior Art Begemann Reference at Fig. 1 and at Col. 4, lines 7-16.
obtaining a plurality of light-emitting semiconductor devices, and mounting said semiconductor devices on said heat sink.	Begemann specifically discloses a plurality of LED's 4 mounted on the heat sink 3. *See, e.g.,* Prior Art Begemann Reference at Figs. 1 and 2.

22.4 Claim 22 of the '885 patent is directed to a light source made in accordance with a number of claims in the alternative including claim 15. Because the Prior Art Begemann Reference teaches the method of claim 15 exactly as recited in the claim, it also teaches a device made according to that method and, therefore, renders claim 22 invalid under 35 U.S.C. § 102.

Example – Invalidity Over the Prior Art Begemann Reference in Combination With the Prior Art Schweber Reference (Obviousness Under 35 U.S.C. § 103)

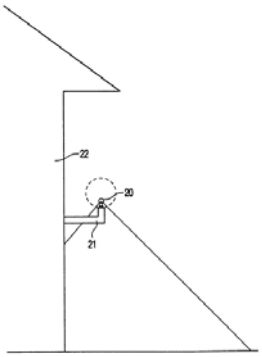
23. As another example, and without limitation, claim 1 of the '961 patent is invalid as being obvious over the Prior Art Begemann Reference in combination with the August 2, 2001 EDN Article "LED's move from indication to illumination" by Bill Schweber, pp. 75-82 (hereinafter the Prior Art Schweber Article").

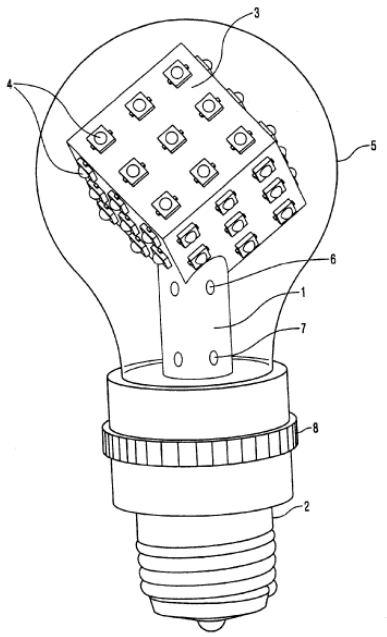
23.1 The Prior Art Schweber Article was published at least as of August 2, 2001 and is, therefore, prior art to each of the CAO Patents.

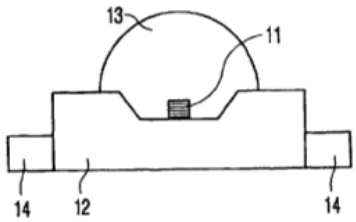
23.2 The Prior Art Schweber Article was cited as prior art against patent applications by Densen Cao having a filing date of August 24, 2001 (the filing date of the '961 patent) and neither Mr. Cao or his patent attorney ever contested the prior art status of the Prior Art Schweber Article with respect to such claim

23.3 As illustrated in the chart below, the Prior Art Begemann Reference, in combination with the Prior Art Schweber Article renders obvious the subject matter of claim 1 of the '961 patent, rendering the claim invalid under 35 U.S.C. § 103.

Claim 1 of the '961 Patent	**Disclosure in the Prior Art Begemann Reference**
1. A semiconductor light source	Begemann discloses a semiconductor LED-base lamp for

for emitting light to illuminate a space used by humans, the semiconductor light source comprising:	emitting light to illuminate a space, such as the outside of a house used by humans.  FIG. 4 FIG. **4** diagrammatically shows an application of a LED lamp, which requires an asymmetric light distribution. The LED lamp (**20**) is used as outdoor lighting and is situated on a holder (**21**) which is secured to the wall (**22**) of a building. *See, e.g.,* Prior Art Begemann Reference at Fig. 4 and at Col. 5, lines 15-18.
an enclosure, said enclosure being fabricated from a material substantially transparent to white light, an interior volume within said enclosure,	Begemann discloses a screw-in type light bulb that includes an enclosure 5, formed of resin that is transparent to white light and that defines a volume within the enclosure.

	 FIG. 2 *See, e.g.,* Prior Art Begemann Reference at Fig. 2 and at Col. 3, lines 48-53 and claim 2 (describing the enclosure as semi-transparent).
a heat sink located in said interior volume, said heat sink being capable of drawing heat from one or more semiconductors devices,	Begemann's lamp includes a heat sink 3 located in the interior of the volume capable of drawing heat away from one or more LED semiconductor devices 4. In the example described with respect to FIG. **2**, the substrate (**3**) is cube-shaped with six flat faces, and is connected to gear column (**1**) via a vertex of the cube. The substrate (**3**) is made of a metal or a metal alloy, thereby enabling a good heat conduction from the LEDs (**4**) to the gear column (**1**) to be achieved. In the present case, the substrate is made of a copper alloy. Each one of the faces of the pyramid is provided with a number of (eight or nine) LEDs (**4**), which are secured to the faces by means of a heat-conducting adhesive. In this example, multiple-chip *See, e.g.,* Prior Art Begemann Reference at Fig. 2 (above) and at Col. 4, lines 22-33.

said heat sink having a plurality of panels on it suitable for mounting semiconductor devices thereon, said panels on said heat sink being oriented to facilitate emission of light from the semiconductor light source in desired directions around the semiconductor light source,	Begemann's heat sink 3 has a plurality of panels (specifically six flat faces) upon which LED semiconductor devices 4 are mounted the panels being oriented at different angles and positions to facilitate the emission of light from the lamp in desired directions around the light source. *See, e.g.,* Prior Art Begemann Reference at Fig. 2 (above) and at Col. 4, lines 22-33 (above).
at least one semiconductor chip capable of emitting light mounted on one of said panels,	Begemann specifically teaches that the LED semiconductor devices used in his lamp can take the form of a semiconductor chip modules 4 capable of emitting light mounted on one of the panels of the heat sink 3. Begemann further specifically teaches that the semiconductor chip module 4 can include a module heat sink 12, and an optical cover 13.  FIG. 3A FIG. **3** is a schematic, sectional view of three types of LEDs **(4)** which can suitably be used in the invented LED lamp. FIG. **3**-A shows a LED which comprises single-chip LEDs, which each have only one light point **(11)** per LED. This light point **(11)** is placed on a so-called MC-PCB **(12)**, which is responsible for a good heat transfer. Light point **(11)** is provided with a primary optical system **(13)**, by means of which the radiation characteristic of the LED can be influenced. The LED **(4)** is also provided with two electrical connections **(14)**. Via these connections, the LED is soldered onto the substrate **(3)**. A heat-conducting adhesive between MC-PCB **(12)** and substrate **(3)** is responsible for a good heat dissipation from the LED to the substrate. *See, e.g.,* Prior Art Begemann Reference at Fig. 3A and at Col. 4, lines 53-65.
said semiconductor chip being	Begemann specifically teaches that the semiconductor chip

capable of emitting monochromatic light, said semiconductor chip being selected fro the group consisting of light emitting diodes, light emitting diode arrays, laser chips, LED modules, laser modules and VCSEL chips; and	modules can be LED modules that produce either green, red or blue monochromatic light. heat-conducting adhesive. In this example, single LEDs of the same type are used, which have only one light point per LED (commonly referred to as single-chip LED). Consequently, the LED lamp shown is monochromatic. * * * * * If single-chip LEDs **(4)** in the colors green, red and blue are employed on the substrate **(3)**, it is convenient to group these LEDs in trios, and provide a further secondary optical system **(15)** above the primary optical systems. In this manner, a good color blending of green, red and blue light is obtained. This situation is diagrammatically shown in FIG. **3**-D. *See, e.g.,* Prior Art Begemann Reference at Col. 3, lines 62-65 and at Col. 5, lines 8-13.
a coating for converting monochromatic light emitting by said chip to white light.	Begemann does not specifically disclose the use of a coating for converting monochromatic light emitted by a chip to white light. Schweber specifically teaches the use of such a coating in the context of LED lamps of the type disclosed by Begemann. As such, it would have been obvious to apply the teaching of Schweber to the lamp of Begemann and produce the claimed subject matter. Another way vendors produce white light is to use an InGaN blue LED and a phosphorus filter in the lens of the LED;

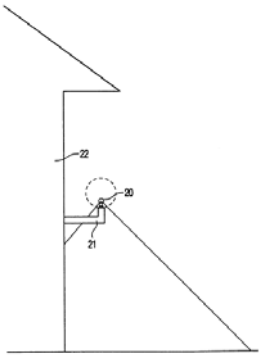
	the phosphors produces a cool white light similar to a standard fluorescent light. By adding more phosphors, the light is more incandescent in color, but the trade-off is less brightness; in contrast, less phosphorus yields a brighter but cooler white output. The single-LED approach works where you need a white-like light, such as an indicator lamp or small-area illumination. *See* the Prior Art Schweber Article at 78-79.

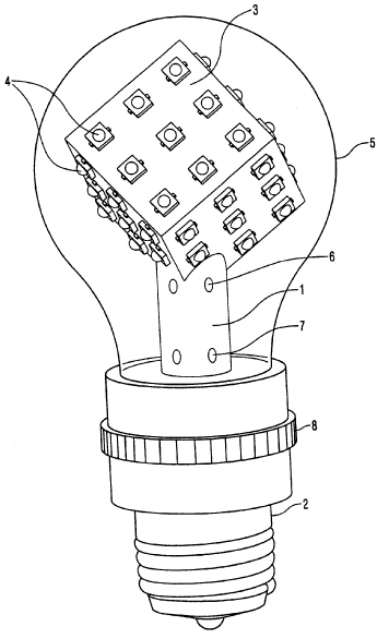
Example – Invalidity Over the Prior Art Begemann Reference in Combination With the Patent and Trademark Office's Official Notice and/or References Disclosing LED Structures (Obviousness Under 35 U.S.C. § 103)

24. As another example, and without limitation, claims 1, 2,3, 4, 12, 13, 14 and 17 of the '770 patent are invalid as being obvious over the Prior Art Begemann Reference in combination with the Prior Art Schweber Article and either or both of: (a) the "Official notice" taken by the Patent and Trademark Office during the prosecution of the '885 patent that chip structure recited in claim 13 was "notoriously well known in the art of semiconductor manufacturing" and "would have been obvious" or (b) any of United States Patent Nos. 6,509,651 to Matsubara et al.; 6,015,979 to Sugiura et al.; 5,535,230 to Abe; or 5,414,281 to Watabe et al.; or 5,998,925 to Shimizu et al.

24.1 Each of United States Patent Nos. 6,509,651 to Matsubara et al.; 6,015,979 to Sugiura et al.; 5,535,230 to Abe; or 5,414,281 to Watabe et al or 5,998,925 to Shimizu et al. is prior art to the CAO Patents.

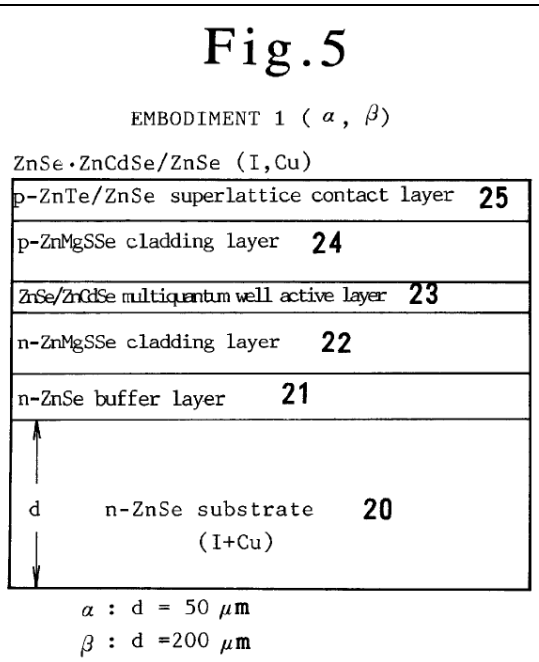
24.2 As illustrated in the chart below, the Prior Art Begemann Reference, in combination with either or both of: (a) the "Official notice" taken by the Patent and Trademark Office during the prosecution of the '885 patent that chip structure recited in claims 1, 2, 3, 4, 12, 13, 14 and 17 was "notoriously well known in the art of semiconductor manufacturing" and "would have been obvious" or (b) any of United States Patent Nos. 6,015,979 to Sugiura et al.; 5,535,230 to Abe; or 5,414,281 to Watabe et al. renders obvious the subject matter of claim 13 of the '770 patent, and, (c) for claims 1, 12, and 14, the Prior Art Schweber Article renders the claims invalid under 35 U.S.C. § 103.

Claim 1, 2, 3, 4, 12, 13, 14 and 17 of the '770 Patent	**Disclosure in the Prior Art Begemann Reference**
1. A semiconductor light source for emitting light to illuminate a space used by humans, the semiconductor light source comprising:	Begemann discloses a semiconductor LED-base lamp for emitting light to illuminate a space, such as the outside of a house used by humans.  FIG. 4 FIG. **4** diagrammatically shows an application of a LED lamp, which requires an asymmetric light distribution. The LED lamp (**20**) is used as outdoor lighting and is situated on a holder (**21**) which is secured to the wall (**22**) of a building. *See, e.g.,* Prior Art Begemann Reference at Fig. 4 and at Col. 5, lines 15-18.
an enclosure, said enclosure being fabricated from a	Begemann discloses a screw-in type light bulb that includes an enclosure 5, formed of resin that is transparent to white light and

material substantially transparent to white light, a base to which said enclosure is mounted, an interior volume within said enclosure,	that defines a volume within the enclosure. The enclosure 5 is mounted on a base 8 (for Fig. 2) or 2 (for Fig. 1).  FIG. 2 *See, e.g.,* Prior Art Begemann Reference at Fig. 2 and at Col. 3, lines 48-53 and claim 2 (describing the enclosure as semi-transparent).
a secondary heat sink located in said interior volume, said secondary heat sink being capable of drawing heat from one or more semiconductors devices,	Begemann's lamp includes a secondary heat sink 3 located in the interior of the volume capable of drawing heat away from one or more LED semiconductor devices 4. In the example described with respect to FIG. **2**, the substrate **(3)** is cube-shaped with six flat faces, and is connected to gear column **(1)** via a vertex of the cube. The substrate **(3)** is made of a metal or a metal alloy, thereby enabling a good heat conduction from the LEDs **(4)** to the gear column **(1)** to be achieved. In the present case, the substrate is made of a copper alloy. Each one of the faces of the pyramid is provided with a number of (eight or nine) LEDs **(4)**, which are secured to the faces by means of a heat-conducting adhesive. In this example, multiple-chip *See, e.g.,* Prior Art Begemann Reference at Fig. 2 (above) and at Col. 4, lines 22-33.
a plurality of primary heat sinks mounted on said	Begemann's lamp includes a plurality of primary heat sinks in the form of MC-PCBs (12) that are mounted on the secondary heat

secondary heat sink, each of said primary heat sinks being smaller than said secondary heat sink,	sink 3 with each of the primary heat sinks 12 being smaller than the secondary heat sink 3: FIG. **3** is a schematic, sectional view of three types of LEDs (**4**) which can suitably be used in the invented LED lamp. FIG. **3-A** shows a LED which comprises single-chip LEDs, which each have only one light point (**11**) per LED. This light point (**11**) is placed on a so-called MC-PCB (**12**), which is responsible for a good heat transfer. Light point *See, e.g.*, Prior Art Begemann Reference at Figs. 1, 2 and 3A and at Col. 4, lines 55-68.
a semiconductor chip capable of emitting light mounted on one of said primary heat sinks, said semiconductor chip being capable of emitting monochromatic light, said semiconductor chip being selected from the group consisting of light emitting diodes, light emitting diode arrays, laser chips, and VCSEL chips,	Begemann specifically teaches that use of semiconductor LED chips mounted on the primary heat sinks 12 that produce monochromatic light. heat-conducting adhesive. In this example, single LEDs of the same type are used, which have only one light point per LED (commonly referred to as single-chip LED). Consequently, the LED lamp shown is monochromatic. * * * * * If single-chip LEDs (**4**) in the colors green, red and blue are employed on the substrate (**3**), it is convenient to group these LEDs in trios, and provide a further secondary optical system (**15**) above the primary optical systems. In this manner, a good color blending of green, red and blue light is obtained. This situation is diagrammatically shown in FIG. **3**-D. *See, e.g.*, Prior Art Begemann Reference at Col. 3, lines 62-65 and at Col. 5, lines 8-13 and at Fig. 3A and at Col. 4, lines 55-68.
said chip including a substrate on which epitaxial layers are grown, a buffer layer located on said substrate, said buffer layer serving to mitigate differences in material properties between said substrate and other epitaxial layers, a first cladding layer serving to confine electron movement within the chip, said first cladding layer being	Begemann does not discuss the details of the semiconductor devices. During the prosecution of the ‘885 patent, however, the Patent and Trademark Office took Official notice that it was obvious and notoriously well-known to form semiconductor devices as recited in this claim.

adjacent said buffer layer, an active layer, said active layer emitting light when electrons jump to a valance state, a second cladding layer, said second cladding layer positioned so that said active layer lies between cladding layers, and a contact layer on which an electron may be mounted for powering said chip,	27. Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Begemann (6,220,722 B1) as applied to claim 30 above, and further in view of official notice. * * * * * 29. As to **claim 36**, semiconductor devices consisting of a substrate, a buffer layer, a first cladding layer, an active layer and a second cladding layer are notoriously well known in the art of semiconductor manufacturing and it would have been obvious to a person of ordinary skill in the art of light emitting diode semiconductor manufacturing to make this layered structure so as to provide a semiconducting structure which produces light as a result of an applied voltage. *See, e.g.*, Office Action of July 21, 2003, '885 Patent Application at 9-10. In addition to the above, the semiconductor structure recited in this claim is disclosed or taught by all of United States Patent Nos. 6,509,651 to Matsubara et al.; 6,015,979 to Sugiura et al.; 5,535,230 to Abe; and 5,414,281 to Watabe et al. or 5,998,925 to Shimizu et al. Because the Prior Art Begemann Reference teaches the use of LED devices, and because these references all show types of LED devices intended for and suitable for use in devices like Begemann's lamp, it would have been obvious to use any of such devices in Begemann's lamp. *See, e.g.*, United States Patent Nos. 6,509,651 to Matsubara et al. at Fig. 5:

	
and a coating for converting monochromatic light emitted by said chip to white light.	Begemann does not specifically disclose the use of a coating for converting monochromatic light emitted by a chip to white light. Schweber specifically teaches the use of such a coating in the context of LED lamps of the type disclosed by Begemann. As such, it would have been obvious to apply the teaching of Schweber to the lamp of Begemann and produce the claimed subject matter. Another way vendors produce white light is to use an InGaN blue LED and a phosphorus filter in the lens of the LED; the phosphors produces a cool white light similar to a standard fluorescent light. By adding more phosphors, the light is more incandescent in color, but the trade-off is less brightness; in contrast, less phosphorus yields a brighter but cooler white output. The single-LED approach works where you need a white-like light, such as an indicator lamp or small-area illumination.

	See the Prior Art Schweber Article at 78-79.
2. A device as recited in claim 1 further comprising a power module for powering the light source, said power module including a fitting for installation in a traditional light bulb socket and an AC/DC converter for converting AC power from traditional building wiring to DC power usable by a semiconductor devices.	Begemann specifically discloses a standard, Edison screw-type connector (2) for coupling the Begemann lamp to a traditional light bulb socket. Such a connector will receive AC power. Because the LED's operate from DC power, the Begemann lamp will necessarily and inherently include an AC/DC converter.
3. A device as recited in claim 1 wherein at least one of said heat sink includes a material selected from the group consisting of include copper, aluminum, silicon carbide, boron nitride natural diamond, monocrystalline diamond, polycrystalline diamond, polycrystalline diamond compacts, diamond deposited through chemical vapor deposition and diamond deposited through physical vapor deposition.	Begemann specifically states that the heat sink 3 can be made of copper: In the example described herein, the substrate (**3**) has the shape of a regular pyramid with four flat faces and is connected to the gear column (**1**) via a vertex of the pyramid. The outer surface of the substrate (**3**) is made of a metal or a metal alloy, thereby enabling a good heat conduction from the LEDs (**4**) to the column (**1**). In the present case, the outer surface of the substrate is made of a copper alloy. Each of the *See, e.g.,* Begemann at Col. 3, lines 53-59.
4. A device as recited in claim 1 further comprising a quantity of heat conductive adhesive located between said chip and said primary heat sink and serving to conduct heat from said chip to said primary heat sink.	Begemann specifically teaches the use of a heat conductive adhesive to promote the conduction of heat from one device to another: is soldered onto the substrate (**3**). A heat-conducting adhesive between MC-PCB (**12**) and substrate (**3**) is responsible for a good heat dissipation from the LED to the substrate. *See, e.g.,* Prior Art Begemann at col. 3, lines 63-65.
12. A device as recited in claim 1 wherein said coating for converting monochromatic light is a phosphor coating	Begemann does not specifically disclose the use of a coating on a chip for converting monochromatic light emitted by a chip to white light. Schweber specifically teaches the use of such a coating in the context of LED lamps of the type disclosed by

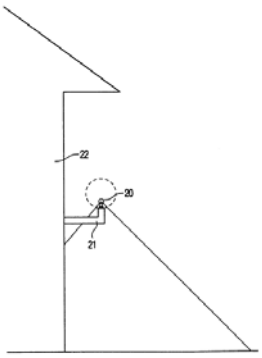
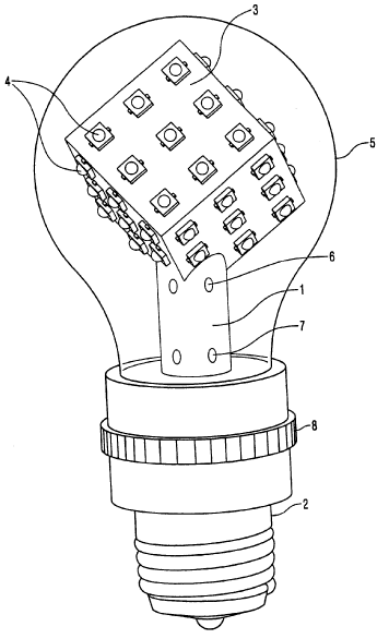
located on said chip.	Begemann. As such, it would have been obvious to apply the teaching of Schweber to the lamp of Begemann and produce the claimed subject matter. Another way vendors produce white light is to use an InGaN blue LED and a phosphorus filter in the lens of the LED; the phosphors produces a cool white light similar to a standard fluorescent light. By adding more phosphors, the light is more incandescent in color, but the trade-off is less brightness; in contrast, less phosphorus yields a brighter but cooler white output. The single-LED approach works where you need a white-like light, such as an indicator lamp or small-area illumination. *See* the Prior Art Schweber Article at 78-79.
13. A semiconductor light source for emitting light to illuminate a space used by humans, the semiconductor light source comprising:	Begemann discloses a semiconductor LED-base lamp for emitting light to illuminate a space, such as the outside of a house used by humans.  FIG. 4

	FIG. **4** diagrammatically shows an application of a LED lamp, which requires an asymmetric light distribution. The LED lamp (**20**) is used as outdoor lighting and is situated on a holder (**21**) which is secured to the wall (**22**) of a building. *See, e.g.,* Prior Art Begemann Reference at Fig. 4 and at Col. 5, lines 15-18.
an enclosure, said enclosure being fabricated from a material substantially transparent to white light, an interior volume within said enclosure,	Begemann discloses a screw-in type light bulb that includes an enclosure 5, formed of resin that is transparent to white light and that defines a volume within the enclosure.  FIG. 2 *See, e.g.,* Prior Art Begemann Reference at Fig. 2 and at Col. 3, lines 48-53 and claim 2 (describing the enclosure as semi-transparent).
a heat sink located in said interior volume, said heat sink being capable of drawing heat from one or more semiconductors devices,	Begemann's lamp includes a heat sink 3 located in the interior of the volume capable of drawing heat away from one or more LED semiconductor devices 4.

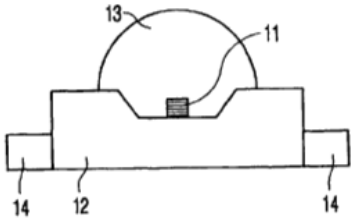
	In the example described with respect to FIG. **2**, the substrate **(3)** is cube-shaped with six flat faces, and is connected to gear column **(1)** via a vertex of the cube. The substrate **(3)** is made of a metal or a metal alloy, thereby enabling a good heat conduction from the LEDs **(4)** to the gear column **(1)** to be achieved. In the present case, the substrate is made of a copper alloy. Each one of the faces of the pyramid is provided with a number of (eight or nine) LEDs **(4)**, which are secured to the faces by means of a heat-conducting adhesive. In this example, multiple-chip *See, e.g.,* Prior Art Begemann Reference at Fig. 2 (above) and at Col. 4, lines 22-33.
a plurality of semiconductor devices located in said interior volume,	Begemann's heat sink 3 has a plurality of faces within the interior of the enclosure 5 upon which a plurality of LED semiconductor devices 4 are mounted. *See, e.g.,* Prior Art Begemann Reference at Fig. 2 (above) and at Col. 4, lines 22-33 (above).
said semiconductor devices being capable of emitting light;	Begemann specifically teaches that the LED semiconductor devices used in his lamp can take the form of a semiconductor chip modules 4 capable of emitting light mounted on one of the panels of the heat sink 3. Begemann further specifically teaches that the semiconductor chip module 4 can include a module heat sink 12, and an optical cover 13.  FIG. 3A

	FIG. **3** is a schematic, sectional view of three types of LEDs **(4)** which can suitably be used in the invented LED lamp. FIG. **3**-A shows a LED which comprises single-chip LEDs, which each have only one light point **(11)** per LED. This light point **(11)** is placed on a so-called MC-PCB **(12)**, which is responsible for a good heat transfer. Light point **(11)** is provided with a primary optical system **(13)**, by means of which the radiation characteristic of the LED can be influenced. The LED **(4)** is also provided with two electrical connections **(14)**. Via these connections, the LED is soldered onto the substrate **(3)**. A heat-conducting adhesive between MC-PCB **(12)** and substrate **(3)** is responsible for a good heat dissipation from the LED to the substrate. *See, e.g.,* Prior Art Begemann Reference at Fig. 3A and at Col. 4, lines 53-65.
at least one of said semiconductor devices including a substrate on which epitaxial layers are grown, a buffer layer located on said substrate, said buffer layer serving to mitigate differences in material properties between said substrate and other epitaxial layers, a first cladding layer serving to confine electron movement within the chip, said first cladding layer being adjacent said buffer layer, an active layer, said active layer emitting light when electrons jump to a valance state, a second cladding layer, said second cladding layer positioned so that said active layer lies between cladding layers, and a contact layer on which an electron may be mounted for powering said chip. at least one	Begemann does not discuss the details of the semiconductor devices. During the prosecution of the '885 patent, however, the Patent and Trademark Office took Official notice that it was obvious and notoriously well-known to form semiconductor devices as recited in this claim. 27. Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Begemann (6,220,722 B1) as applied to claim 30 above, and further in view of official notice. * * * * * 29. As to **claim 36**, semiconductor devices consisting of a substrate, a buffer layer, a first cladding layer, an active layer and a second cladding layer are notoriously well known in the art of semiconductor manufacturing and it would have been obvious to a person of ordinary skill in the art of light emitting diode semiconductor manufacturing to make this layered structure so as to provide a semiconducting structure which produces light as a result of an applied voltage. *See, e.g.*, Office Action of July 21, 2003, '885 Patent Application at 9-10. In addition to the above, the semiconductor structure recited in this claim is disclosed or taught by all of United States Patent

	Nos. 6,509,651 to Matsubara et al.; 6,015,979 to Sugiura et al.; 5,535,230 to Abe; and 5,414,281 to Watabe et al. or 5,998,925 to Shimizu et al. Because the Prior Art Begemann Reference teaches the use of LED devices, and because these references all show types of LED devices intended for and suitable for use in devices like Begemann's lamp, it would have been obvious to use any of such devices in Begemann's lamp. *See, e.g.*, United States Patent Nos. 6,509,651 to Matsubara et al. at Fig. 5: Fig.5 EMBODIMENT 1 (α, β) ZnSe·ZnCdSe/ZnSe (I,Cu) p-ZnTe/ZnSe superlattice contact layer 25 p-ZnMgSSe cladding layer 24 ZnSe/ZnCdSe multiquantum well active layer 23 n-ZnMgSSe cladding layer 22 n-ZnSe buffer layer 21 d n-ZnSe substrate (I+Cu) 20 α : d = 50 μm β : d =200 μm
14. A device as recited in claim 13 further comprising a coating for converting monochromatic light emitted by at least one of said semiconductor devices to white light.	Begemann does not specifically disclose the use of a coating for converting monochromatic light emitted by a chip to white light. Schweber specifically teaches the use of such a coating in the context of LED lamps of the type disclosed by Begemann. As such, it would have been obvious to apply the teaching of Schweber to the lamp of Begemann and produce the claimed subject matter. Another way vendors produce white light is to use an InGaN blue LED and a phosphorus filter in the lens of the LED;

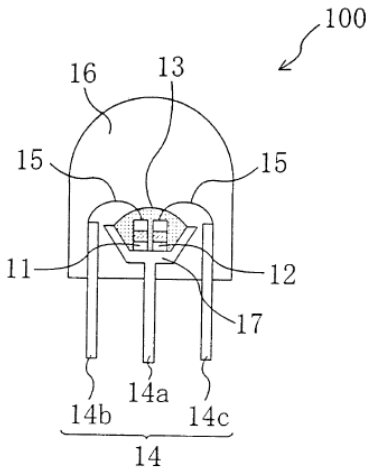
	the phosphors produces a cool white light similar to a standard fluorescent light. By adding more phosphors, the light is more incandescent in color, but the trade-off is less brightness; in contrast, less phosphorus yields a brighter but cooler white output. The single-LED approach works where you need a white-like light, such as an indicator lamp or small-area illumination. *See* the Prior Art Schweber Article at 78-79.
17. A device as recited in claim 13 wherein said heat sink includes a material selected from the group consisting of include copper, aluminum, silicon carbide, boron nitride natural diamond, monocrystalline diamond, polycrystalline diamond, polycrystalline diamond compacts, diamond deposited through chemical vapor deposition and diamond deposited through physical vapor deposition.	Begemann specifically states that the heat sink 3 can be made of copper: In the example described herein, the substrate (**3**) has the shape of a regular pyramid with four flat faces and is connected to the gear column (**1**) via a vertex of the pyramid. The outer surface of the substrate (**3**) is made of a metal or a metal alloy, thereby enabling a good heat conduction from the LEDs (**4**) to the column (**1**). In the present case, the outer surface of the substrate is made of a copper alloy. Each of the *See, e.g.*, Begemann at Col. 3, lines 53-59.

Example – Invalidity Over the Prior Art Shimizu Reference (Anticipation Under 35 U.S.C. § 102

25. As another example, and without limitation, claims 1 and 22 of the '885 patent is invalid as being anticipated by prior art United States Patent No. 6,577,073 to Shimizu et al. (hereinafter the "Prior Art Shimizu Reference"). Among other things:

25.1 The Prior Art Shimizu Reference was filed on May 25, 2001 and is, therefore, prior art to each of the CAO Patents.

25.2 As illustrated in the chart below, the Prior Art Shimizu Reference completely discloses the subject matter of claim 1 of the '885 patent, exactly as recited in the claim, rendering the claim invalid under 35 U.S.C. § 102:

Claim 1 of the '885 Patent	**Disclosure in the Prior Art Shimizu Reference**
1. A method for making a semiconductor light source intended to be used for emitting light to illuminate a space used by humans, the method comprising:	The Prior Art Shimizu Reference discloses a LED lamp 100 with good color reproducibility and high luminous efficacy for use in illuminating a space used by humans. SUMMARY OF THE INVENTION It is therefore an object of the present invention to provide an LED lamp with good color reproducibility and high luminous efficacy. *See, e.g.,* the Prior Art Shimizu Reference at col. 2, lines 37-30.
fabricating an enclosure, said enclosure being fabricated from a material substantially transparent to white light, and said enclosure having an interior volume,	The semiconductor light source 100 in the Prior Art Shimizu Reference includes an enclosure in the form of a plastic encapsulant 16. The enclosure in the reference is transparent to white light and has an interior volume in which various elements including a heat sink 17, a plurality of LEDs 11 and 12 and conversion coating 13 are located. 

	The pedestal **17** on which the blue and red LED chips **11** and **12** are mounted, the bonding wires **15** and parts of the leadframe **14** are molded together with a bulletlike transparent plastic encapsulant **16**. The plastic encapsulant **16** may be epoxy or silicone resin, for example. The plastic encapsulant **16** does not have to be formed in the illustrated bullet shape, but may be parallelepiped like a chip for a surface mount device (SMD). *See, e.g.,* the Prior Art Shimizu Reference Fig. 1 and at col. 7, lines 20-28.
fabricating at least one heat sink to be located within said enclosure, said heat sink being shaped to facilitate mounting of semiconductor devices thereon, said heat sink being adapted to draw heat away from semiconductor devices mounted on it,	The semiconductor light source 100 in the Prior Art Shimizu Reference includes a heat sink in the form of pedestal 17 that is located within the enclosure 16 and that is specially shaped to facilitate mounting of two semiconductor LEDs 11 and 12. The heat sink 17 will draw heat away form the semiconductor devices 11 and 12. In the integrated LED lamp **100** shown in FIG. **1**, the lead **14***a* is used in common for the blue and red LED chips **11** and **12** and those chips **11** and **12** are mounted on the same pedestal **17**. Accordingly, the blue and red LED chips **11** and **12** can be coupled together thermally. Then, it is easier to control the temperature characteristics of the lamp **100** because these chips **11** and **12** can be used at substantially equal temperatures. Otherwise, i.e., if four leads, not includ- *See, e.g.,* the Prior Art Shimizu Reference at Fig. 1 (above) and at col. 7, lines 20-28.
selecting a plurality of semiconductor devices capable of emitting light emitting devices, mounting said semiconductor devices on said heat sink(s),	The semiconductor light source 100 in the Prior Art Shimizu Reference includes two semiconductor devices 11 and 12 mounted on the heat sink 17. *See, e.g.,* the Prior Art Shimizu Reference at Fig. 1 (above) and at col. 7, lines 20-28.
applying a conversion coating for converting monochromatic light emitted by said chips to white light to the interior of said enclosure.	The semiconductor light source 100 in the Prior Art Shimizu Reference includes a conversion coating 13 in the form of a phosphor covering 13 applied in the interior of the enclosure that converts monochromatic light emitted by the LED chips 11 and 12 to white light.

	Furthermore, the LED lamp **100** is an integrated one, and is implementable at a relatively small size. Moreover, the blue and red LED chips **11** and **12** are mounted on the same pedestal **17** and are covered with the phosphor **13**. Accordingly, the phosphor **13** can scatter and diffuse the emissions of the blue and red LED chips **11** and **12**. For that reason, when an object is illuminated with the light produced by this lamp **100**, the color unevenness can be reduced even more effectively. More specifically, where the emissions of the blue and red LED chips **11** and **12** are simply combined to produce white light, the resultant light is not completely white but is uneven in colors to a certain degree. In this LED lamp **100**, however, the emissions of these LED chips **11** and **12** are scattered, diffused and then combined while passing through the phosphor **13**. As a result, white light with reduced color unevenness can be produced. Optionally, to *See, e.g.,* the Prior Art Shimizu Reference at Fig. 1 (above) and at col. 7, line 60 to col. 8, line 12.

25.3 Claim 22 of the '885 patent is directed to a light source made in accordance with a number of claims in the alternative including claim 1. Because the Prior Art Shimizu Reference teaches the method of claim 1 exactly as recited in the claim, it also teaches a device made according to that method and, therefore, renders claim 1 invalid under 35 U.S.C. § 102.

Example – Invalidity Over the Prior Art Shimizu Reference in Combination With the Patent and Trademark Office's Official Notice and/or References Disclosing LED Structures (Obviousness Under 35 U.S.C. § 103)

26. As another example, and without limitation, claim 8 of the '885 patent is invalid as being obvious over the Prior Art Shimizu Reference in combination with either or both of: (a) the "Official notice" taken by the Patent and Trademark Office during the prosecution of the '885 patent that chip structure recited in claim 13 was "notoriously well known in the art of

semiconductor manufacturing" and "would have been obvious" or (b) any of United States Patent Nos. 6,015,979 to Sugiura et al.; 5,535,230 to Abe; or 5,414,281 to Watabe et al.. This is reflected in the chart below:

Claim 8 of the '885 Patent	**Disclosure in the Prior Art Shimizu Reference**
8. A method as recited in claim 1 wherein at least one of said semiconductor devices includes	As reflected in the previous paragraphs the Prior Art Shimizu Reference discloses all of the limitations of claim 1.
at least one of said semiconductor devices including a substrate on which epitaxial layers are grown, a buffer layer located on said substrate, said buffer layer serving to mitigate differences in material properties between said substrate and other epitaxial layers, a first cladding layer serving to confine electron movement within the chip, said first cladding layer being adjacent said buffer layer, an active layer, said active layer emitting light when electrons jump to a valance state, a second cladding layer, said second cladding layer positioned so that said active layer lies between cladding layers, and a contact layer on which an electron may be mounted for powering said chip.	The Prior Art Shimizu Reference does not discuss the details of the semiconductor devices. During the prosecution of the '885 patent, however, the Patent and Trademark Office took Official notice that it was obvious and notoriously well-known to form semiconductor devices as recited in this claim. 27. Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Begemann (6,220,722 B1) as applied to claim 30 above, and further in view of official notice. * * * * * 29. As to **claim 36**, semiconductor devices consisting of a substrate, a buffer layer, a first cladding layer, an active layer and a second cladding layer are notoriously well known in the art of semiconductor manufacturing and it would have been obvious to a person of ordinary skill in the art of light emitting diode semiconductor manufacturing to make this layered structure so as to provide a semiconducting structure which produces light as a result of an applied voltage. *See, e.g.*, Office Action of July 21, 2003, '885 Patent Application at 9-10. In addition to the above, the semiconductor structure recited in this claim is disclosed or taught by all of United States Patent Nos. 6,015,979 to Sugiura et al.; 5,535,230 to Abe; and 5,414,281 to Watabe et al.. Because the Prior Art Shimizu Reference teaches

	the use of LED devices, and because these references all show types of LED devices intended for and suitable for use in devices like Shimizu's lamp, it would have been obvious to use any of such devices in Shimizu's lamp.

Example – Invalid as Indefinite

27. As a further example, claim 11 of the '885 patent is invalid because it is indefinite. For example and without limitation:

27.1 Claim 11 of the '885 patent depends from claim 9 of the '885 patent.

27.2 Claim 11 of the '885 patent recites "wherein ***said heat sink*** has an air chamber within it. . . ." (emphasis added).

27.3 There is no antecedent basis in either of claims 9 or 11 '885 patent for the term "said heat sink.

27.4 Claim 9 of the '885 patent recites a "secondary heat sink" and a plurality of "primary heat sinks."

27.5 It is unclear whether the reference to "said heat sink" in claim 11 of the '885 patent refers to the "secondary heat sink" of claim 9, one of the "primary heat sinks" of claim 9, or some combination. Because of this unclarity, claim 11 is invalid as being indefinite under 35 U.S.C. § 112.

28. As a further example, claims 15 and 16 of the '961 patent and claims 9 and 10 of the '770 patent are invalid because they are indefinite. For example and without limitation:

28.1 Claims 15 and 16 of the '961 patent depend from claim 1 of the '961 patent.

28.2 Claim 15 of the '961 patent recites "a quantity of heat conductive adhesive located between said chip ***and said primary heat sink. .*** ." (emphasis added). Claim 16

of the '961 patent recites "a quantity of light reflective adhesive located between said chip ***and said primary heat sink***."

28.3 There is no antecedent basis in claim 1 or 15 or 16 of the '961 patent for the term "said primary heat sink." As a result, the reference to "said primary heat sink" in claims 15 and 16 is unclear. Because of this unclarity, claims 15 and 16 of the '961 patent are invalid as being indefinite under 35 U.S.C. § 112.

28.4 The phrase "electrically conductive" in claim 9 of the '770 patent is a vague, undefined term for which no objective definition is found in the '770 patent. As such, this claim is indefinite and invalid.

28.5 The phrase "electrically insulative" in claim 10 of the '770 patent is a vague, undefined term for which no objective definition is found in the '770 patent. As such, this claim is indefinite and invalid.

Example -- Claim 16 of the '961 Patent Invalid for Double Patenting

29. As a further example, claim 16 of the '961 patent is invalid on grounds of double-patenting. Claim 16 is identical in words and scope to claim 6 of the '961 patent.

COUNT III

UNENFORCEABILITY OF THE CAO PATENTS DUE TO INEQUITABLE CONDUCT

Common Background

30. GE restates and incorporates by reference its allegations in the previous paragraphs of its Counterclaims.

31. An actual case or controversy exists between GE and the Plaintiff as to whether the CAO Patents are unenforceable due to inequitable conduct.

32. A judicial declaration is necessary and appropriate so that GE may ascertain its rights as to whether the CAO Patents are unenforceable due to inequitable conduct.

33. On April 24, 2001, Densen Cao and his patent attorney, Daniel P. McCarthy of Parsons, Behle & Latimer (hereinafter "Mr. Cao and his patent attorney") filed six patent applications all related to a semiconductor light source, all naming Densen Cao as an inventor, and all disclosing substantially similar technology. These applications were:

33.1 United States Patent Application Serial No. 09/939,340 which ultimately issued as the '961 patent (hereinafter "the '961 patent application");

33.2 United States Patent Application Serial No. 09/938,876, which ultimately issued as the '770 patent (hereinafter "the '770 patent application");

33.3 United States Patent Application Serial No. 09/938,875 which ultimately issued as the '885 patent (hereinafter "the '885 patent application");

33.4 United States Patent Application Serial No. 09/939,488, which ultimately issued as United States Patent No. 6,634,771 (hereinafter "the '771 patent application");

33.5 United States Patent Application Serial No. 09/938,777, which ultimately issued as United States Patent No. 6,719,446 (hereinafter "the '446 patent application"); and

33.6 United States Patent Application Serial No. 09/939,339, which ultimately issued as United States Patent No. 7,224,001 (hereinafter "the '001 patent application").

34. Because the claims presented in the six patent applications filed by Mr. Cao and his patent attorney differed, the six applications were assigned to different Art Units, with different technical specialties, and to different Patent Examiners for examination. In particular:

34.1 The ‘961 patent application was assigned to Examiner Jim Clinger and to Art Unit 2821 – Electronic Circuits.

34.2 The ‘770, ‘771 and ‘446 patent applications were assigned to Examiner Jacob Choi and to Art Unit 2875 – Illumination.

34.3 The ‘885 patent application was assigned to Examiner Scott Geyer and to Art Unit 2829 – Semiconductors/Manufacturing & Measuring.

34.4 The ‘001 patent application was assigned to Examiner Jacob Choi and to Art Unit 2815 – Semiconductors.

35. On August 28, 2002, prior to the issuance of any of the CAO Patents, Examiner Choi (from the Illumination Art Unit) mailed a communication from the United States Patent and Trademark Office to Mr. Cao’s patent attorney in connection with the ‘771 patent application (hereinafter “the August 28, 2002 (Illumination) Office Action”).

36. On August 29, 2002, prior to the issuance of any of the CAO Patents, Examiner Choi (from the Illumination Art Unit) mailed a communication from the United States Patent and Trademark Office to Mr. Cao’s patent attorney in connection with the ‘446 patent application (hereinafter “the August 29, 2002 (Illumination) Office Action”).

37. On April 10, 2003, prior to the issuance of the ‘770 and ‘885 patents, Examiner Jackson (from the Semiconductor Art Unit) mailed a communication from the United States Patent and Trademark Office to Mr. Cao’s patent attorney in connection with the ‘001 patent application (hereinafter “the April 10, 2003 (Semiconductor) Office Action”).

38. On July 21, 2003, prior to the issuance of any of the ‘770 and ‘885 patents, Examiner Geyer (from the Semiconductor Manufacturing Art Unit) mailed a communication from the

United States Patent and Trademark Office to Mr. Cao's patent attorney in connection with the '885 patent application (hereinafter "the July 21, 2003 (Semiconductor Manufacturing) Office Action").

Unenforceability of the '961 Patent

39. The Prior Art Begemann Reference and the Prior Art Schweber Reference both disclose illumination devices and, as such, are references that would be known to patent examiners in the Illumination Art Unit 2875, such as Examiner Choi.

40. Neither the Prior Art Begemann Reference nor the Prior Art Schweber Reference are directed to electronic circuits and, therefore, are not references that would necessarily be known to patent examiners in the Electronic Circuit Art Unit 2821, such as Examiner Clinger, the patent examiner to which the '961 patent was assigned.

41. The sole basis provided by Examiner Clinger for allowing the claims of the '961 patent application as follows:

> 2. The following is an examiner's statement of reasons for allowance: The limitation which distinguishes the claims of this application over the prior art is the limitation concerning the heat sink having a plurality of panels and being located inside a transparent enclosure.
>
> The prior art does not disclose proper motivation for combining references which disclose this limitation with the references which disclose the other limitations recited in the claims of this application.

See Notice of Allowability for the '961 patent application at 2.

42. Prior to the issuance of the ‘961 patent, Mr. Cao and his patent attorney learned that prior art to the ‘916 patent, not before Examiner Clinger, did specifically meet “the limitation concerning the heat sink having a plurality of panels and located inside a transparent enclosure.”

43. For example, prior to the issuance of the ‘961 patent, Mr. Cao and his patent attorney learned of the Prior Art Begemann Patent, at least from the August 28, 2002 (Illumination) Office Action in which Examiner Choi rejected several claims of the ‘771 patent application as being unpatentable as over the Prior Art Begemannn Reference. The Prior Art Begemann Reference clearly discloses, describes and illustrates a semiconductor lighting source meeting “the limitation concerning the heat sink having a plurality of panels and located inside a transparent enclosure.”

44. As another example, prior to the issuance of the ‘961 patent, Mr. Cao and his patent attorney learned of the Prior Art Begemann Patent, at least from the August 29, 2002 (Illumination) Office Action in which Examiner Choi rejected several claims of the ‘446 patent as being unpatentable as anticipated by the Begemannn Reference.

45. Prior to the issuance of the ‘961 patent, Mr. Cao and his patent attorney obtained knowledge of the Prior Art Schweber Reference, at least from the August 28, 2002 (Illumination) Office Action in which Examiner Choi rejected several claims of the ‘771 patent as being unpatentable and obvious over the Begemann Reference in combination with the Schweber Reference.

46. In addition, prior to the issuance of the ‘961 patent, Mr. Cao and his patent attorney obtained knowledge of the Prior Art Schweber Reference, at least from the August 29, 2002 (Illumination) Office Action in which Examiner Choi rejected several claims of the ‘446 patent

as being unpatentable and obvious over the Begemann Reference in combination with the Schweber Reference.

47. Prior to the issuance of the '961 patent, Mr. Cao and his patent attorney obtained knowledge that Patent Examiner Choi from the Illumination Art Unit was of the opinion that the Prior Art Begemann Reference disclosed the sole grounds for allowability articulated by Examiner Clinger with respect to the claims of the '961 patent application. Mr. Cao and his attorney obtained such information at least from the August 28, 2009 and the August 29, 2002 (Illumination) Office Actions. A chart comparing the sole grounds provided by Examiner Clinger for allowance of the claims of the '961 patent application with Examiner Choi's statements concerning the Prior Art Begemann Reference from the August 28 and August 29, 2002 (Illumination) Office Actions is provided below:

Examiner Clinger ('961 patent application Examiner) from the Electronic Circuit Art Unit	2. The following is an examiner's statement of reasons for allowance: The limitation which distinguishes the claims of this application over the prior art is the limitation concerning the heat sink having a plurality of panels and being located inside a transparent enclosure. The prior art does not disclose proper motivation for combining references which disclose this limitation with the references which disclose the other limitations recited in the claims of this application.

Examiner Choi ('771 patent application Examiner) from the Illumination Art Unit **(Pre-issuance of '961 patent)**	6. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Begemann (USPN 6,220,722) in view of Bill Schweber (LEDs move from indication to illumination) Regarding claims 1-3, Begemann discloses an enclosure (5), the enclosure being fabricated from a material substantially transparent to white light (column 2, lines 10-20), a base (2) to which the enclosure is mounted, an interior volume within the enclosure (Figures 1 & 2), a secondary heat sink located in the interior volume (3), the secondary heat sink being capable of drawing heat from one or more semiconductors devices, a plurality of primary heat sinks (12) mounted on the secondary heat sink (3), each of the primary heat sinks being smaller than the secondary heat sinks (Figures 3A-3D), a semiconductor chip capable of emitting light mounted on one of the primary heat
Examiner Choi ('446 patent application Examiner) from the Illumination Art Unit **(Pre-issuance of '961 patent)**	10. Claims 5, 6, 7, 8, 24, 31 & 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Begemann (USPN 6,220,722). Regarding claim 5, Begemann discloses an enclosure of light transparent material (5), a base of electrically conductive material (2), a heat sink located within the enclosure (3, 12), a plurality of light emitting diodes mounted on the heat sink (4), at least some of the light emitting diodes being capable of emitting light of wavelength in the range of from about 200 nanometers to about 700 nanometers (inherent that LEDs of Begemann is a visible light source, which includes violet, indigo, blue, green, yellow, orange & red), and the light emitting diodes being arranged on the heat sink in order to emit light in all directions other than to the base (Figure 4), electrical connection among the light emitting diodes, electrical connection of the light emitting diodes to the base (inherent).

	Regarding claim 31, Begemann discloses an enclosure (5), the enclosure being fabricated from a material substantially transparent to white light, a base (2) to which the enclosure is mounted, an interior volume within the enclosure, a secondary heat sink located in the interior volume (3), the secondary heat sink being capable of drawing heat from one or more semiconductor devices mounted on it, a plurality of generally planar faces located on the secondary heat sink, a plurality of surface mounted LED packages mounted on a plurality of the faces of the secondary heat sink, at least one of Regarding claim 13, a power module for powering the light source (2), the power module including a fitting for installation in a traditional light bulb socket, a heat sink (3, 12), the heat sink including a material selected from the group consisting of include copper, aluminum, silicon carbide, boron nitride natural diamond, monocrystalline diamond, polycrystalline diamond, polycrystalline diamond compacts, diamond deposited through chemical vapor deposition and diamond deposited through physical vapor deposition, a plurality of panels on the heat sink (shown in all Figures), the panels being generally planar in configuration, a plurality of semiconductor devices capable of emitting light (4), at least some of the panels hosting the semiconductor devices, and heat conductive adhesive bonding at least some of the semiconductor devices to the heat sink. Begemann discloses the claimed invention except for the specific details of

48. Prior to the issuance of the ‘961 patent, Mr. Cao and his patent attorney obtained knowledge that Patent Examiner Choi from the Illumination Art Unit was of the opinion that the Prior Art Begemann Reference disclosed the limitations of at least one claim of the ‘961 patent application, including but not limited to, claim 17. Mr. Cao and his attorney obtained such information at least from the August 28 and 29, 2002 (Illumination) Office Actions. As one example, a chart comparing the limitations in claim 17 of the pending ‘961 application with

Examiner Choi's statements concerning the Prior Art Begemann Reference from the August 29, 2002 (Illumination) Office Action is provided below:

Claim 17 of the '961 patent application	**Examiner Choi's Statements Concerning the Prior Art Begemann Reference from the August 29, 2002 (Illumination) Office Action**
17. A semiconductor light source for emitting light to illuminate a space used by humans, the semiconductor light source comprising: an enclosure, said enclosure being fabricated from a material substantially transparent to white light, an interior volume within said enclosure, a heat sink located in said interior volume, said heat sink being capable of drawing heat from one or more semiconductors devices, said heat sink having a plurality of panels on it suitable for	10. Claims 5, 6, 7, 8, 24, 31 & 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Begemann (USPN 6,220,722). Regarding claim 5, Begemann discloses an enclosure of light transparent material (5), a base of electrically conductive material (2), a heat sink located within the enclosure (3, 12), a plurality of light emitting diodes mounted on the heat sink (4), at least some of the light emitting diodes being capable of emitting light of wavelength in the range of from about 200 nanometers to about 700 nanometers (inherent that LEDs of Begemann is a visible light source, which includes violet, indigo, blue, green, yellow, orange & red), and the light emitting diodes being arranged on the heat sink in order to emit light in all directions other than to the base (Figure 4), electrical connection among the light emitting diodes, electrical connection of the light emitting diodes to the base (inherent).

mounting semiconductor devices thereon, said panels on said heat sink being oriented to facilitate emission of light from the semiconductor light source in desired directions around the semiconductor light source,	Regarding claim 8, Begemann discloses the heat sink has a plurality of radially oriented sides and a top, each radially oriented sides and the top having a light emitting diode mounted on it. Regarding claim 24, Begemann discloses an enclosure (5), the enclosure being fabricated from a material substantially transparent to white light, a base (2) to which the enclosure is mounted, an interior volume within the enclosure, a secondary heat sink located in the interior volume, the secondary heat sink (3) being capable of drawing heat from one or more semiconductors devices mounted on it, a surface mounted LED package mounted on the secondary heat sink, the surface mount LED package including, a primary heat sink (12), a well (Figures 3A-3D) located on the primary heat sink, the well being capable of receiving a semiconductor device therein, an LED chip (11) located in the well, the LED chip being capable of emitting light, and a dome located on the primary heat sink in order to cover the well and the LED chip and to fully enclose the LED chip between the primary heat sink and the dome (Figures 3a-3D).
at least one semiconductor chip module capable of emitting light mounted on one of said panels, said semiconductor chip module including a module heat sink, a semiconductor chip mounted to said module heat sink, and a cover covering said semiconductor chip, said	Regarding claim 32, Begemann discloses an enclosure (5), the enclosure being fabricated from a material substantially transparent to white light, a base (2) to which the enclosure is mounted, an interior volume within the enclosure, a secondary heat sink (3) located in the interior volume, the secondary heat sink being capable of drawing heat from one or more semiconductors devices mounted on it, a plurality of laser diodes modules mounted on the secondary heat sink, at least one of the laser diode modules including, a primary heat sink (12), a well (Figures 3A-3D) located on the primary heat sink, the well being capable of receiving a semiconductor device therein, a diode laser located in the well (11), the diode laser being capable of emitting light, and a cover (13) located on the primary heat sink in order to cover the well and the diode laser and to fully enclose the diode laser between the primary heat sink and the dome.

semiconductor chip module being capable of emitting monochromatic light.	

49. Prior to the issuance of the '961 patent, Mr. Cao and his patent attorney obtained knowledge that illumination-specialist Examiner Choi was of the opinion that the Prior Art Begemann Reference, when considered in view of the Prior Art Schweber Reference, rendered the subject matter of at least one claim of the then-pending '961 patent application obvious, including, but not limited to claim 1. Mr. Cao and his attorney obtained such knowledge at least from the August 28 and 29, 2002 (Illumination) Office Actions. As one example, a chart comparing the limitations of claim 1 of the pending '961 application with Examiner Choi's statements concerning the Prior Art Begemann and Schweber References as contained in the August 29, 2002 (Illumination) Office Action is provided below:

Claim 1 of the '961 Patent	**Examiner Choi's Statements Concerning the Prior Art Begemann Reference from the August 29, 2002 (Illumination) Office Action**
1. A semiconductor light source for emitting light to illuminate a space used by humans, the semiconductor light source comprising: an enclosure, said enclosure being fabricated from a material substantially	

transparent to white light, an interior volume within said enclosure, a heat sink located in said interior volume, said heat sink being capable of drawing heat from one or more semiconductors devices, said heat sink having a plurality of panels on it suitable for mounting semiconductor devices thereon, said panels on said heat sink being oriented to facilitate emission of light from the semiconductor light source in desired directions around the semiconductor light source, at least one semiconductor chip capable of emitting light mounted on one of said panels, said semiconductor chip being capable of emitting monochromatic light, said semiconductor chip being selected fro the group consisting of light emitting diodes, light emitting diode	10. Claims 5, 6, 7, 8, 24, 31 & 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Begemann (USPN 6,220,722). Regarding claim 5, Begemann discloses an enclosure of light transparent material (5), a base of electrically conductive material (2), a heat sink located within the enclosure (3, 12), a plurality of light emitting diodes mounted on the heat sink (4), at least some of the light emitting diodes being capable of emitting light of wavelength in the range of from about 200 nanometers to about 700 nanometers (inherent that LEDs of Begemann is a visible light source, which includes violet, indigo, blue, green, yellow, orange & red), and the light emitting diodes being arranged on the heat sink in order to emit light in all directions other than to the base (Figure 4), electrical connection among the light emitting diodes, electrical connection of the light emitting diodes to the base (inherent). Regarding claim 8, Begemann discloses the heat sink has a plurality of radially oriented sides and a top, each radially oriented sides and the top having a light emitting diode mounted on it. Regarding claim 24, Begemann discloses an enclosure (5), the enclosure being fabricated from a material substantially transparent to white light, a base (2) to which the enclosure is mounted, an interior volume within the enclosure, a secondary heat sink located in the interior volume, the secondary heat sink (3) being capable of drawing heat from one or more semiconductors devices mounted on it, a surface mounted LED package mounted on the secondary heat sink, the surface mount LED package including, a primary heat sink (12), a well (Figures 3A-3D) located on the primary heat sink, the well being capable of receiving a semiconductor device therein, an LED chip (11) located in the well, the LED chip being capable of emitting light, and a dome located on the primary heat sink in order to cover the well and the LED chip and to fully enclose the LED chip between the primary heat sink and the dome (Figures 3a-3D).

arrays, laser chips, LED modules, laser modules and VCSEL chips; and	Regarding claim 32, Begemann discloses an enclosure (5), the enclosure being fabricated from a material substantially transparent to white light, a base (2) to which the enclosure is mounted, an interior volume within the enclosure, a secondary heat sink (3) located in the interior volume, the secondary heat sink being capable of drawing heat from one or more semiconductors devices mounted on it, a plurality of laser diodes modules mounted on the secondary heat sink, at least one of the laser diode modules including, a primary heat sink (12), a well (Figures 3A-3D) located on the primary heat sink, the well being capable of receiving a semiconductor device therein, a diode laser located in the well (11), the diode laser being capable of emitting light, and a cover (13) located on the primary heat sink in order to cover the well and the diode laser and to fully enclose the diode laser between the primary heat sink and the dome.
a coating for converting monochromatic light emitting by said chip to white light.	13. Claims 3, 9, 10, 23, 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Begemann (USPN 6,220,722) in view of Bill Schweber (LEDs move from indication to illumination). Regarding claim 3, Begemann discloses the claimed invention except for a specific detail of coating. Schweber teaches that it is known to apply a suitable phosphorus filter / coating in the lens of the LED or a lens fabricated of molded epoxy, which serves to protect the chips and further shape both the LED's color spectrum and its luminous spatial distribution. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify a semiconductor light source with a luminous powder coating on the interior of the enclosure. Schweber states at page 78 & 80 that such a modifications would be obvious to shape the LED's color spectrum to create a white light.

		Regarding claim 23, Begemann discloses the claimed invention except for a specific detail of a quantity of phosphor of on the semiconductor device for converting single wavelength light emitted by the semiconductor device to white light useful to humans. Schweber teaches that it is known to apply a suitable phosphorus filter / coating in the lens of the LED or a lens fabricated of molded epoxy, which serves to protect the chips and further shape both the LED's color spectrum and its luminous spatial distribution. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify a semiconductor light source with a luminous powder coating on the interior of the enclosure. Schweber states at page 78 & 80 that such a modifications would be obvious to shape the LED's color spectrum to create a white light.

50. The Prior Art Begemann Reference was material to the '961 patent application. Among other things, the Prior Art Begemann Reference anticipated and rendered obvious the subject matter of at least claim 17 of the '961 patent application.

51. The Prior Art Schweber Reference was material to the '961 patent application. Among other things, the Prior Art Schweber Reference, in combination with the Prior Art Begemann Reference rendered obvious the subject matter of at least claim 1 of the '961 patent application.

52. The opinions and statements of illumination-specialist Examiner Choi as expressed in the August 28 and 29, 2002 (Illumination) Office Actions, including the opinions set forth in the preceding paragraphs, and the August 28 and 29, 2002 (Illumination) Office Actions were material to the '961 patent application. *See, e.g., Dayco Products, Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 1368 (Fed. Cir. 2003) (finding material a contrary decision of another examiner reviewing a substantially similar claim). The materiality of these opinions and statements is enhanced considering that the claims of the '961 patent application concerned

illumination devices, that Examiner Choi was in the Art Unit specializing in Illumination and that Examiner Clinger (the examiner handling the ‘961 patent application) was in a different Art Unit.

53. At no time prior to the issuance of the ‘961 patent did either Mr. Cao or his patent attorney disclose any of the material information identified in the previous paragraphs to the Patent Examiner handling the ‘961 patent application.

54. Based on the evidence and information set out above, the single most reasonable inference able to be drawn is that Mr. Cao and/or his patent attorney withheld the material information identified in the preceding paragraphs with the specific intent to deceive the PTO into improperly issuing the ‘961 patent. As a result of these actions, the ‘961 patent is unenforceable.

Unenforceability of the '770 Patent

55. The '770 patent application was handled by Examiner Choi from Art Unit 2875 – Illumination.

56. Examiner Choi allowed the claims of the '770 patent application because he believed that the "[n]one of the references disclosed the details of the semiconductor chip including a specific substrate on which epitaxial layers are grown in combination with the first and secondary heat sink located within the enclosure." *See* Notice of Allowability for the '770 patent at 2-3.

57. Prior to the issuance of the '770 patent, Mr. Cao and his patent attorney obtained knowledge from Examiner Geyer from the Semiconductor/Manufacturing Art Unit that the use of a semiconductor chip including a specific substrate on which epitaxial layers are grown as recited in the then-pending claims of the '770 patent application was "notoriously well known in the art of semiconductor manufacturing"; "would have been obvious;" and so well known that it could be confirmed through "official notice."

57.1 Mr. Cao and his patent attorney obtained this knowledge from the July 21, 2003 Semiconductor Manufacturing Office Action in which semiconductor-manufacturing specialist Examiner Geyer rejected claims 36 and 26 of the '885 patent as follows:

> 20. Claims 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Begemann (6,220,722 B1) and Schweber ("LEDs move from indication to illumination", EDN magazine, August 2, 2001, page 78) as applied to claim 21 above, and further in official notice.

22. As to **claim 26**, semiconductor devices consisting of a substrate, a buffer layer, a first cladding layer, an active layer and a second cladding layer are notoriously well known in the art of semiconductor manufacturing and it would have been obvious to a person of ordinary skill in the art of light emitting diode semiconductor manufacturing to make this layered structure so as to provide a semiconducting structure which produces light as a result of an applied voltage.

27. Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Begemann (6,220,722 B1) as applied to claim 30 above, and further in view of official notice.

29. As to **claim 36**, semiconductor devices consisting of a substrate, a buffer layer, a first cladding layer, an active layer and a second cladding layer are notoriously well known in the art of semiconductor manufacturing and it would have been obvious to a person of ordinary skill in the art of light emitting diode semiconductor manufacturing to make this layered structure so as to provide a semiconducting structure which produces light as a result of an applied voltage.

57.2 Neither Mr. Cao nor his patent attorney ever disputed, contested or challenged that the use of a semiconductor chip including a specific substrate on which epitaxial layers are grown as recited in the then-pending claims of the ‘770 patent application was

"notoriously well known in the art of semiconductor manufacturing"; "would have been obvious;" and so well known that it could be confirmed through "official notice."

58. In addition to the above, prior to the issuance of the '770 patent, Mr. Cao and his patent attorney obtained knowledge from Examiner Jackson of the Semiconductor Art Unit that the use of a semiconductor chip including a specific substrate on which epitaxial layers are grown as recited in the then-pending claims of the '770 patent application was known and that the limitations concerning details of such a chip were insufficient to render a claim patentable.

58.1 Mr. Cao and his patent attorney obtained this knowledge from the April 10, 2003 Semiconductor Office Action in which semiconductor specialist Examiner Jackson rejected claims 55 and 66 of the '001 patent as follows:

> Claims 55-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Begemann '722 in view of Abe '230, Sugiura and Watabe.
>
> Begemann teaches a multiple led light source as applicant with a primary heat sink 3 and multiple secondary heat sinks 12, and led chips 4. One difference is that Begemann does not teach a phosphor coating. This difference is not patentable because Abe suggests phosphor coating for producing bright white light. Another difference is that Begemann does not teach the specifics of the chips as claimed. These differences are not patentable because the claimed specifics are obvious in view of Sugiura and Watabe who teach and suggest GaN based leds with DBR reflectors for the purpose of bright emission at blue wavelengths. Electrically insulative substrates are obvious from the sapphire substrate teachings of Sugiura and electrically conductive substrates are shown by substrate 1 of Watabe.

58.2 Neither Mr. Cao nor his patent attorney ever disputed, contested or challenged the statement of Examiner Jackson that the use of a semiconductor chip as recited was known.

59. The opinions and statements of semiconductor manufacturing-specialist Examiner Geyer as expressed in the July 21, 2003 (Semiconductor Manufacturing) Office Action and semiconductor specialist Examiner Jackson as expressed in the April 10, 2003 (Semiconductor) Office Action, including the opinions set forth in the paragraphs above; the Abe, Sugiura and Watabe references contained in the April 10, 2003 (Semiconductor Manufacturing) Office Action; and the referenced office actions themselves, were material to the '770 patent application. *See, e.g., Id.* (finding material a contrary decision of another examiner reviewing a substantially similar claim). The materiality this information is enhanced considering that the sole basis upon which Examiner Choi (an illumination-specialist) found the claims of the '770 patent to be patentable concerned issues relating to the construction of a semiconductor device; that Examiner Choi was in the Art Unit specializing in Illumination and that Examiner Geyer and Examiner Jackson (who both found the semiconductor limitations to be known and of no patentable significance) were in special Art Units focused on semiconductors.

60. At no time prior to the issuance of the '770 patent did either Mr. Cao or his patent attorney disclose any of the material information discussed in the previous paragraphs to the Patent Examiner handling the '770 patent application.

61. Based on the evidence and information set out above, the single most reasonable inference able to be drawn is that Mr. Cao and/or his patent attorney withheld the material information identified in the preceding paragraphs with the specific intent to deceive the PTO

into improperly issuing the ‘770 patent. As a result of these actions, the ‘770 patent is unenforceable.

Unenforceability of the ‘885 Patent

62. The ‘885 patent application was handled by Examiner Geyer from Art Unit 2928 – Semiconductor/Manufacture and Measuring.

63. Examiner Geyer allowed the claims of the ‘885 patent application because he believed that the prior art of record during the prosecution of the ‘885 patent and his knowledge did not teach or render obvious three illumination-oriented limitations in the claims of the ‘885 patent application namely:

63.1 “[A]pplication of a conversion coating to the interior of the enclosure for a semiconductor light source” as recited in claim 22 of the ‘885 patent application;

63.2 “[A]pplication of a light reflective adhesive between a chip and a heat sink within a semiconductor light source” as recited in claim 25 of the ‘885 patent application; and

63.3 “[A]n air chamber within a heat sink, wherein the heat sink is within a semiconductor light source” as recited in claim 28 of the ‘885 patent application.

64. Prior to the issuance of the ‘885 patent, Mr. Cao and his patent attorney obtained knowledge from Examiner Choi of the Illumination Art Unit that the three illumination-oriented limitations in the claims of the ‘885 patent referenced in the previous paragraph were known in, disclosed by, and/or obvious over the prior art.

64.1 For example, and without limitation, Mr. Cao and his patent attorney obtain this knowledge from the August 28 (Illumination) 2002 Office action in which illumination-specialist Examiner Choi rejected various claims of the ‘771 patent application,

specifically finding that all three illumination-orientated limitations were known, disclosed and/or obvious over the prior art as follows:

Illumination-Orientated Limitations Relied Upon by Examiner Geyer to Allow Claims in '885 Patent	**Examiner Choi's Statements Concerning the Prior Art Begemann Reference from the August 28, 2002 (Illumination) Office Action**
"[A]pplication of a conversion coating to the interior of the enclosure for a semiconductor light source"	Begemann discloses the claimed invention except for a specific detail of the transparent material being capable of converting monochromatic light emitted by the chip to white light. Schweber teaches that it is known to apply a phosphorus filter in the lens of LED as a second way to produce white light. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify a semiconductor light source with a coating for converting monochromatic light emitted by the chip to white light located either on the interior of the enclosure or located on the chip, since Schweber states at page 78 & 80 that such a modification would be obvious to create a white light.
"[A]pplication of a light reflective adhesive between a chip and a heat sink within a semiconductor light source"	Regarding claim 7, Begemann in view of Schweber discloses claimed invention, explained above. In addition, Begemann discloses a quantity of light reflective adhesive located between the chip and the primary heat sink (Figures 3A-3D).

	Regarding claim 11, Begemann in view of Schweber discloses claimed invention, explained above. In addition, Begemann discloses a quantity of light reflective adhesive located between the chip and the primary heat sink.

64.2 As a further example and without limitation, Mr. Cao and his patent attorney obtained this knowledge from the August 29, 2002 (Illumination) Office Action in which illumination-specialist Examiner Choi rejected various claims of the '446 patent application, specifically finding that two of the three illumination-orientated limitations were known, disclosed and/or obvious over the prior art as follows:

Illumination-Orientated Limitations Relied Upon by Examiner Geyer to Allow Claims in '885 Patent	**Examiner Choi's Statements Concerning the Prior Art Begemann Reference from the August 29, 2002 (Illumination) Office Action**
"[A]pplication of a conversion coating to the interior of the enclosure for a semiconductor light source"	Regarding claim 3, Begemann discloses the claimed invention except for a specific detail of coating. Schweber teaches that it is known to apply a suitable phosphorus filter / coating in the lens of the LED or a lens fabricated of molded epoxy, which serves to protect the chips and further shape both the LED's color spectrum and its luminous spatial distribution. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify a semiconductor light source with a luminous powder coating on the interior of the enclosure. Schweber states at page 78 & 80 that such a modifications would be obvious to shape the LED's color spectrum to create a white light.

	Regarding claim 23, Begemann discloses the claimed invention except for a specific detail of a quantity of phosphor of on the semiconductor device for converting single wavelength light emitted by the semiconductor device to white light useful to humans. Schweber teaches that it is known to apply a suitable phosphorus filter / coating in the lens of the LED or a lens fabricated of molded epoxy, which serves to protect the chips and further shape both the LED's color spectrum and its luminous spatial distribution. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify a semiconductor light source with a luminous powder coating on the interior of the enclosure. Schweber states at page 78 & 80 that such a modifications would be obvious to shape the LED's color spectrum to create a white light.
"[A]n air chamber within a heat sink, wherein the heat sink is within a semiconductor light source"	Regarding claim 11, Begemann discloses a heat sink (3, 12), a plurality of wells on the heat sink (Figures 3A-3D), a plurality of semiconductor devices capable of emitting light (4), at least one semiconductor device located in each of the wells (Figures 3A-3D), an air chamber having an entrance (7) and an exit (6), a quantity of TE material located on the air chamber, a fan (9) located in the air chamber capable of drawing air into the entrance and forcing air out of the exit so that heat may be drawn away from the TE material and in turn drawn away from the heat sink and the semiconductor devices (Figure 1), a power module (2) for powering the light source. Regarding claim 14, Begemann discloses an air chamber in the heat sink for dissipating heat.

64.3 Neither Mr. Cao nor his patent attorney ever disputed, contested or challenged that the three illumination oriented limitations referenced in the previous paragraphs were known in, disclosed by, and/or obvious over the prior art as stated by Examiner Choi in the August 28 and 29 (Illumination) 2002 Office Actions.

65. The opinions and statements of illumination-specialist Examiner Choi as expressed in the August 28 and 29, 2002 (Illumination) Office Actions, including the opinions set forth in above, and the August 28 and 29, 2002 (Illumination) Office Actions, were material to the '885 patent application. *See, e.g., Id.* (finding material a contrary decision of another examiner reviewing a substantially similar claim). The materiality of this information is enhanced considering that the sole basis upon which Examiner Geyer (a semiconductor manufacturing-specialist) found the claims of the '885 patent to be allowable were the three illumination-oriented limitations discussed above; that Examiner Geyer was in the Art Unit specializing in semiconductors and that Examiner Choi (who found the illumination limitations in the '885 patent application's claims to be known and of no patentable significance) were in special Art Units focused on semiconductors.

66. At no time prior to the issuance of the '885 patent did either Mr. Cao or his patent attorney disclose any of the material information discussed in the previous paragraphs to Examiner Geyer, the semiconductor manufacturing-specialist handling the '885 patent application.

67. Based on the evidence and information set out above, the single most reasonable inference able to be drawn is that Mr. Cao and/or his patent attorney withheld the material information identified in the preceding paragraphs with the specific intent to deceive the PTO into improperly issuing the '885 patent. As a result of these actions, the '885 patent is unenforceable.

PRAYER FOR RELIEF

WHEREFORE, GE Lighting, Inc. prays for judgment as follows:

a. A judgment dismissing the Plaintiffs' Complaint against GE Lighting, Inc. with prejudice;

b. A declaration that this case is exceptional and an award to GE Lighting, Inc. its reasonable costs and expenses of litigation, including attorneys' fees and expert witness fees;

c. Such other and further relief as this Court may deem just and proper.

WHEREFORE, General Electric Company prays for judgment as follows:

a. A judgment in favor of General Electric Company on all of its Counterclaims;

b. A declaration that General Electric Company has not infringed, contributed to the infringement of, or induced others to infringe, either directly or indirectly, any valid claims of the CAO Patents;

c. A declaration that the each of the CAO Patents is invalid;

d. A declaration that the each of the CAO Patents is unenforceable;

e. A declaration that this case is exceptional and an award to General Electric Company of its reasonable costs and expenses of litigation, including attorneys' fees and expert witness fees;

e. Such other and further relief as this Court may deem just and proper.

DATED this 2nd day of September, 2011.

KIPP AND CHRISTIAN, P.C.

/s/ Gregory J. Sanders_____
GREGORY J. SANDERS

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(Motion for admission *pro hoc vice* to be filed)

CERTIFICATE OF MAILING

IT IS HEREBY CERTIFIED that on the 2nd day of September 2011, I caused a true and correct copy of the foregoing:

GE LIGHTING, INC.'S ANSWER, AFFIRMATIVE DEFENSES, AND COUNTERCLAIMS OF GENERAL ELECTRIC COMPANY TO CAO GROUP'S COMPLAINT FOR PATENT INFRINGEMENT

to be e-filed with the United States District Court, Central Division, and notice of Electronic Filing was sent by the Court to the following:

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